

Subscription Price, \$6 Per Year (U. S. and Canada). Foreign: \$10.00 Per Year.

Inside Dope

By GEORGE
F. TAUBENECK



Learn to live and laugh —
thus delay your epitaph

Stories of the Week
Around the World
In 50 Days
Big News for the Future
Screwball Mottoes
Air Conditioning Note

Stories of the Week *

An annoying kibitzer finally had to go to the Used Beer Dept. The card players he'd been overseeing decided to teach him a lesson—by originating an all-rules-barred game.

When the kibitzer returned, the dealer threw away half the deck, then tore two cards in half and gave them to Player No. 1. That fellow tore off six corners and slipped only those corners to Player No. 2.

Then the dealer tore six more cards in quarters—giving half to Player No. 3 and half to himself.

Player No. 1 glanced at his hand and announced: "I have a mingle. I'll bet a dollar."

Player No. 2 poker-faced: "I've got a snazzle. I'll make it \$2."

After Player No. 3 dropped, the dealer bluffed: "I've got a farfle. I'll raise it to \$5."

Kibitzer interjected: "You've got no reason to raise a mingle and a snazzle on a lousy farfle."

Definition of a Salesman: Man with a smile on his face, a shine on his shoes, and a lousy territory.

Around the World In 50 Days

How does it feel to be starting on a flying trip around the world? Wonderful!

And "Dope" is mighty grateful to the Australian Institute of Refrigeration, which is footing most of the bill. (We're making several talks to that institute's convention in May.)

Best part about it is that we'll have reunions with a lot of old business friends in Australia, the Far East, the Near East, and Europe.

AIR CONDITIONING & REFRIGERATION NEWS, you see, has subscribers everywhere. Twenty-odd years ago "Dope" toured the world, visiting subscribers and reporting on their activities.

That circumnavigation required seven months. This one, thanks to the speed of air travel, is budgeted for seven weeks.

It means brief stopovers (one or two days) almost everywhere except Australia. Even so, we hope to get together with subscribers at every port of call, (Continued on Page 8, Col. 1)

People Pout About Poor Service; Personally Prefer Performance to Price

(Conscience of the Industry Editorial
By George F. Taubeneck)

REVOLUTION in buying habits is occurring presently. In recent years hordes of people primarily sought discounts when investing in consumer durable goods. Now they're sick of such bargains.

Reason: repairs are ultra-expensive. Furthermore, servicing often is difficult to obtain when you want it and need it.

Hence, the current consumer trend is toward buying from installers who are known for their ability and reliability to provide genuine SERVICE.

Cutline underneath a recent national magazine cartoon (showing a plumber and a housewife) reads: "I can fix it for a flat, exorbitant fee; or, if you prefer, fool around with it on an hourly basis."

And that's the key to this current "revolution" in homeowner buying habits relative to such consumer durables

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Contractors Woo Architects with Plan

To Promote Meeting of Specifications

FORT WORTH, Texas—If a contractor member fails to meet requirements of the city code or an architect's specifications, he will be subject to a hearing and possible ouster from the Fort Worth Air Conditioning Association, Inc.

A resolution on this was recently adopted by the association and is being circulated to local architects to focus their attention on the group's activities.

The resolution reads, in part, as follows:

N. J. RACCA OKs 'Workable' 3-Year Contract with UA

NEWARK, N. J.—The Refrigeration & Air Conditioning Contractors Association of New Jersey and the United Association recently agreed to a new three-year contract.

The new agreement is similar, in almost all aspects, to the contract which has been in effect between the parties during the past year, after having been found workable and desirable.

"That each contractor member agrees that when the architect limits the bidding on small commercial or residential air conditioning installations, up to 50 tons, to the members of this group, that he will guarantee the installation to be in accordance with the plans and specifications; and

"That when plans and specifications are furnished by the architect, and the installation is not completed in accordance with the plans, specifications, and authorized and mutually agreed upon changes, and after notification in writing by the architect to the contractor member of the defects or improper installation, and the contractor member does not, within five days from receipt of said notice, start work to bring the installation up to the quality of the plans and specifications, then the association, upon receipt of written notice from the architect, will immediately start its proceedings to hear and determine such violation by

(Concluded on Back Page, Col. 1)

Auto Air Conditioning Sales Still Soaring Upward

HOT IN '57

DETROIT—The annual survey by AIR CONDITIONING & REFRIGERATION NEWS of automobile air conditioner sales indicates that in 1957 they soared to a new high of 402,233 units, up 41% over the phenomenal volume recorded in 1956.

The 1957 total is 117,123 more units than were installed the previous year and is almost three times the number of homes air conditioned last year.

This survey of automobile manufacturers, independent automobile air conditioning unit manufacturers, and suppliers shows that 35.4% of the total 1957 installations, or 142,330 (Concluded on Page 37, Col. 3)

HOTTER IN '58?

By C. Dale Mericle

DALLAS—With sales already running well ahead of last year, 1958 could be the best yet for "independent" manufacturers of automobile air conditioning equipment.

This is the belief of five leading producers in the Dallas-Fort Worth area.

"Our sales are running 30% ahead already this year," declares Don Mitchell, vice presi-

NEWS Gives Facts, Figures On Booming Auto Cooling

Fastest growing segment of the air conditioning industry is auto air conditioning. There are some who predict that it may some day lead all other segments of the industry in terms of number of units sold.

In this issue, special attention has been focused on auto air conditioning. Stories have been prepared covering such subjects as sales figures (by both auto manufacturers and independent auto cooling unit makers), dealer operations, and the benefits of auto comfort cooling as something more than just "comfort."

Stories will be found on pages 25-27 and 30-35.

dent in charge of sales for J. E. Mitchell Co., Inc. (Mark IV).

"We're better than 100% ahead of last year. We should wind up with a 50% increase over 1957 if we have any summer at all," comments D. A. Brown, A.R.A. sales manager.

"This year looks good. Our sales are way ahead of last year, and there seems to be more interest than ever before (Concluded on Page 34, Col. 1)

SUTTON SPONSORS STUDY

Driving Tests Reveal Auto Conditioning Benefits to Driver's Health, Alertness

WICHITA, Kan.—Drivers of air conditioned automobiles experience up to a 44% greater safety factor in their "ability to judge distance in passing" according to the results of a series of driving tests conducted on the Arizona desert under clinical supervision. The tests also revealed that drivers of air conditioned cars experienced less fatigue and eye strain.

The "hypnotic" effect, created by long continuous driving that has been credited with many single car accidents, was proven to be almost non-existent with the driver of an air conditioned car.

Tests were conducted under

the sponsorship of The O. A. Sutton Corp., manufacturer of Vornado automobile air conditioners.

"There have been many claims made about safety advantages of automobile air conditioning," points out H. F. Hildreth, president of the company, "the driving tests, under clinical supervision, that have been underwritten by Vornado show safety and personal comfort advantages in an air conditioned car that are amazing revelations to the entire industry."

The clinical tests were conducted over a two-week period (Concluded on Page 31, Col. 1)

ASHAE-ASRE Plan Joint Sessions At Minneapolis Meetings June 23

NEW YORK CITY — The semiannual meeting of the American Society of Heating & Air-Conditioning Engineers will take place June 23-25 in the Pick-Nicoll hotel, Minneapolis.

It is planned to present nine papers and two symposiums during five sessions which will run Monday through Wednesday.

Preceding the meeting the Council of the Society will meet Sunday, June 22 with various committees meeting Saturday, June 21.

Inasmuch as the 54th annual meeting of the American Society of Refrigerating Engineers will take place at the same time in the Leamington hotel, the two societies plan to hold several joint sessions and special events.

ASRE will hold two joint

conferences with ASHAE, one on Tuesday afternoon and the other on Wednesday afternoon. The subject of the first conference will be air conditioning and that of the second, education.

Both societies will hold separate welcome luncheons in their respective headquarters hotels. However, on Tuesday evening there will be a joint banquet in the Leamington hotel.

James S. Locke is the general chairman of the ASHAE Minnesota Chapter Committee on Arrangements for the semiannual meeting. The honorary chairmen are John E. Haines and F. B. Rowley, both past presidents of ASHAE. Assisting Locke are Vice Chairmen G. M. Kendrick and J. F. Siegel.

Declares Dividend

LA CROSSE, Wis. — The Trane Co. board of directors recently announced a first quarter cash dividend of 22½ cents on common stock.

ARI Standard 910-58

New Mechanical-Draft Water-Cooling Tower Standard Changes 'Purpose'

WASHINGTON, D. C. — A new ARI Standard for "Mechanical-Draft Water-Cooling Towers for Use with Air Conditioning and Refrigeration Equipment" has been issued by the Air-Conditioning & Refrigeration Institute.

The new standard, numbered 910-58, supersedes ARI Standard 910-55.

Primary among the changes which mark the new standard are the statement of "purpose," and sections which follow out this change in purpose.

'DETERMINING RATINGS'

The purpose set forth in the opening paragraph of the revision is "to establish minimum standard specifications and to

PROVIDES FOR TESTING

The old version made no reference to the provision of means for "determining accurate ratings." Also, the revised standard provides for testing in accordance with ASRE Standard 38-57, and at the same time a method is provided for arriving at application ratings corresponding to conditions other than the "standard rating" conditions.

TERMS OF STANDARD • CAPACITY RATINGS

The new standard provides for the statement of standard capacity ratings in terms of: Gallons per minute, for water flow rate; Fahrenheit temperatures for water entering and leaving the tower; Fahrenheit temperatures for entering air; B.t.u.-per-hour (in 1,000 B.t.u. increments) for measurement of heat rejection.

The revised Standard 910-58 was prepared by the Engineering Committee of the ARI Cooling Tower Section, of which P. A. Rose of Larkins Coils, Inc., is chairman. Copies are available from ARI at 25 cents each.

Edward M. Flannery Dies; Was Dunham-Bush Official

W. HARTFORD, Conn.—Edward M. Flannery, who retired from his post as vice president of Dunham-Bush, Inc. last August, is dead of a heart attack.

Flannery held several important executive posts in national air conditioning and commercial refrigeration industry organizations. He was secretary, later vice president, and in 1947, president of Refrigeration Equipment Manufacturers Association.

Flannery joined Bush Mfg. Co. in 1919 and served in many capacities before being made secretary in 1930 and vice president in 1942. After Bush was consolidated with C. A. Dunham Co. in 1956, he continued as vice president of the merged firm.

He was a member of the advisory board of directors of Air-Conditioning & Refrigeration Institute, successor organization to REMA. He was also past president of the Purchasing Agents Society of Hartford county.

The Space-Saving **LARKIN** Half-Turret Humi-Temp Balances Temperature and Humidity



Larkin Half-Turret Humi-Temps are quality engineered to control temperature and humidity in applications above 35°F. Units mount flush to cooler wall and ceiling permitting maximum storage space.

Scientifically designed air diffuser assures uniform distribution of air, 100% usage of coil surface, more effective leaving air. Lip on drip pan

forces air up and out and prevents cold air from re-entering the evaporator.

It will pay you to investigate the advantages of the Larkin Half-Turret Humi-Temp—another quality refrigeration product with traditionally fine engineering and workmanship.

See your wholesaler or write for Bulletin 1049B.

Features That Sell

- Built-in heat exchanger
- Original, patented Larkin Cross-Fin Coil with staggered electro-tinned copper tubing and aluminum fins
- Light-weight, rust-proof aluminum case finished in Larkin Blue or gleaming white
- Permanently lubricated motors, resiliently mounted, with thermal overload protection
- Hinged drain pan for easy access to coil
- Airplane-type, vibration-proof fastenings
- Heavy die-stamped mounting brackets, slotted for easy mounting
- Fully insulated drip pan



LARKIN TURRET HUMI-TEMP
ALSO AVAILABLE



LARKIN COILS
INC.
519 MEMORIAL DRIVE, S.E., ATLANTA, GEORGIA

BASIC RATINGS

Model	Capacity Rating Btu/hr @ 10° TD F	Total Surf. Area	Cfm
HT-25	2500	74	500
HT-35	3500	85	700
HT-45	4500	107	900
HT-54	5400	154	880
HT-68	6800	189	1120
HT-87	8700	228	1400
HT-106	10600	296	1850

Redmond

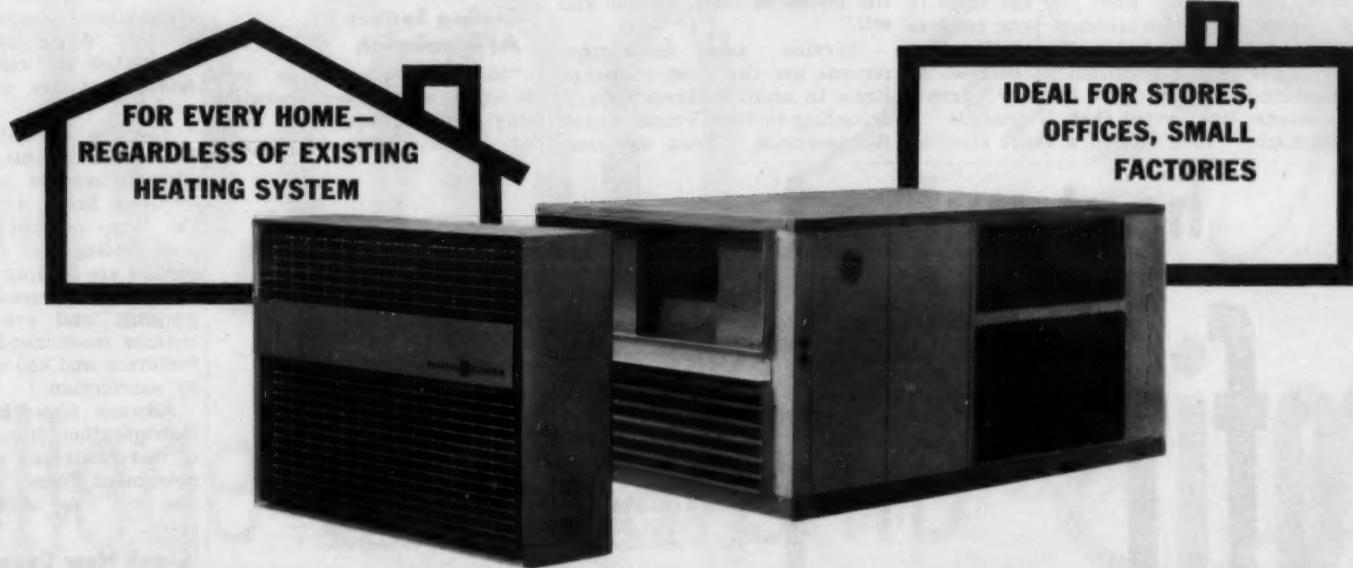
MICROMOTORS
One of largest stocks
in the world!

MARVIN L. "FERGIE" FERGSTAD
FACTORY DISTRIBUTOR

CYCLO-FREEZE CORP.
6318 Cambridge, Mpls. 16, Minn.
West 8-6794

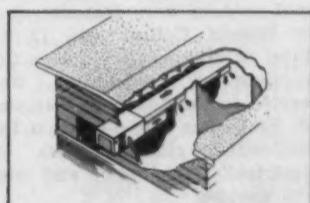
YOU CAN COVER THE WATERLESS FRONT WITH THIS
NEW • VERSATILE • COMPACT
**GENERAL ELECTRIC AIR-COOLED
PACKAGED COOLING UNIT**

DESIGNED FOR **2 MARKETS**

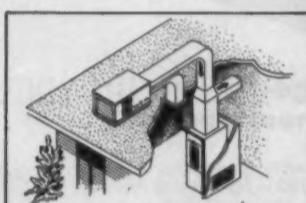


This versatile General Electric Air-Cooled Unit—that uses no water—opens a vast double residential market for you. 1. Homes without ductwork—using steam or hot water heating, or without central heating. 2. Homes with ductwork. This unit—equipped with its own blower—may be used with either an existing duct system or an independent one. Smart, compact and easy to install anywhere (see diagrams), simple to maintain—and certain to sell!

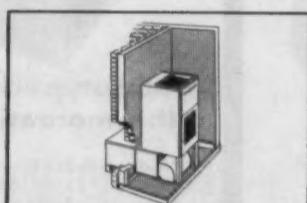
The new General Electric Air-Cooled Packaged Unit is a natural for the commercial and industrial market. Used with decorative Diffuser-Filterframe, it can be installed without ductwork. Compact, lightweight, smartly designed, it may be mounted conveniently through-the-wall. Electrical resistance heater can be easily added for year-round air conditioning. Here is a unit that is a profit-maker in every market.



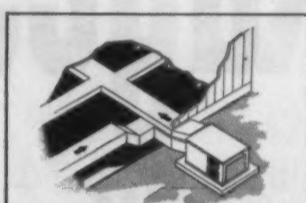
CENTRAL HALLWAY INSTALLATION.
Install false ceiling and use as duct to carry cool air through high registers. Return air can be brought back via grille located near unit.



FLAT OR LOW-PITCHED ROOF INSTALLATION. Entire unit may be mounted outside house. Ductwork may be extended from unit on roof to connect with new or existing system.



BASEMENT INSTALLATION. Cold air is ducted from unit to discharge of furnace and distributed through existing ductwork. Return air taken from furnace. Dampers control distribution.



SLAB HOUSE OR CRAWL SPACE INSTALLATION. Mounted outside house. Ducts may be run in crawl space or exterior walls to central system. Return air from grille located near unit.



SMALL STORE, OFFICE OR COMMERCIAL INSTALLATION. Mount in transom or through wall. Or entire unit may be mounted outside. Ductwork connects with new or existing distribution system.

PART OF GENERAL ELECTRIC'S BLUEPRINT FOR LEADERSHIP PLAN

Advanced new products, such as the General Electric Air-Cooled Packaged Unit are only the beginning! More will be coming your way—the latest developments in heating and cooling products for homes, stores, offices and factories. For General Electric's Blueprint for Leadership Plan calls for a continuing program of new product development, sales training aids, financing plans, national and local advertising—the best of everything to assure the leadership position for General Electric dealers. Why not plan *your* future with General Electric? Contact your nearest General Electric distributor—you'll find him listed in the *yellow pages* of your telephone directory...or mail coupon today.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Air Conditioning Dept., Tyler, Texas

General Electric Company
Air Conditioning Dept.
Tyler, Texas
Att'n Mr. L. H. Hirschbach

ACD6

I am interested in signing up with General Electric so that I can benefit from G.E.'s Blueprint for Leadership Plan.

NAME _____

FIRM NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Small Shop Needs Service, Installation Records*

Taking Orders on Price May Get Volume, But Not Profit, RSES Midwest Regional Educational Conference Advised

By Frank J. Versagi

MINNEAPOLIS — Enthusiastic approval was given a uniquely organized educational conference arranged by the Upper Midwest Regional Association of the Refrigeration Service Engineers Society and the William Hood Dunwoody Institute in this city.

Twelve educational talks were presented with three independent talks being given simultaneously. The 159 registrants had the opportunity to choose the talk they most wanted to hear from each group of three.

The program was arranged with four sessions for salesmen-contractors and eight sessions for installers and servicemen,

and the entire educational program was accomplished in one day—a fact which received praise from both the manufacturers participating and the registrants.

'Don't Offer Many Choices In Sale'

In the business sessions, William Rice, "Freon" Products Div., du Pont, pointed out that "Ninety per cent of the people will buy what you ask them to buy. Don't reduce your chances for a sale by offering the prospect a multitude of choices. At the most, give him one alternative; avoid that, if possible."

Rice offered a chart showing

the steps to be followed in effective salesmanship. In discussing the chart, he covered such details as the physical environment for the interview. "Avoid following the prospect around his shop or working in a noisy place if you possibly can," he said.

'Go Out and Sell'

"Taking orders on price may get volume, but not profit," Rice warned. "Don't wait for the phone to ring; go out and sell."

"Service and installation records are the most neglected items in small business today," according to Dick Frank, Frank Refrigeration. "When one shop

has retail sales, contract service on new products for other dealers, air conditioning service and storage, commercial service, general service, etc., it is vital that management knows which are making money and which are not."

Frank revealed the actual forms used by his company, including actual customer remarks on postmarked reply cards. He described in detail the methods they use to keep records of all facets of the operation. "While there probably is no perfect method for keeping records, rest assured that the small shop can do so without an I.B.M. machine.

Discuss Evacuating Cooling System At Installation

"Most important," he concluded, "the smaller operation truly cannot afford to be without service and installation

records if it is to succeed."

The installation and servicing of packaged air conditioners in industry and in the home were discussed in the sessions for servicemen. There was considerable discussion over a statement concerning the use of vacuum pumps by E. Weiss, product application engineer of American Furnace Co.

While admitting the desirability of evacuating a system upon installation, Weiss stated that in practice most servicemen have found that the few charges they lose by not catching a small leak with a vacuum pump do not compare in cost with the total time involved if every installed unit were evacuated. "We do recommend evacuation where possible and/or desirable," Weiss continued, "but in practice the man in the field finds it is not always necessary."

The use of multiple evacuation when cleaning up a unit after a burnout was described by John Bopp, Ansul Chemical Co. Bopp pointed out that recent findings by certain study groups are lending more weight to the recommended cleaning, purging, and evacuating procedures recommended by manufacturers and too often ignored by servicemen.

Edward Asproth of Asproth Refrigeration discussed the use of test cords and electrical test equipment from "the practical and not the laboratory viewpoint."

'Check New Capacitors With Wattmeter'

Asproth explained the methods for using multiple capacitors in series or parallel depending upon the effect desired. "Check new capacitors with a wattmeter before using them; we have sent quite a few back to the manufacturer because these tests showed them defective."

Industrial modulating direct fired heaters were demonstrated by Harold Collins and D. C. Rupp of Mammoth Furnace Co. Applications, installation, and service techniques were described. Emphasis was placed on the "fail-safe" characteristics of electrically fired pilot and control system.

Other talks in the serviceman sessions covered truck refrigeration, cab coolers, and low temperature equipment. Reports on several of the talks mentioned above will appear in future issues of the News.

New officers elected at the business meeting of the Upper Midwest Regional Association were: president, R. E. Rooney, Head of the Lakes; first vice president, Earl Oberholzer, Winnipeg; second vice president, Archie Robertson, Twin Cities; secretary, William Hansen, Red River; treasurer, Roland Johnson, Souris; and sergeant-at-arms, Larry Woodman, Aberdeen.

The Aberdeen chapter was accepted into the Upper Midwest Regional Association of RSES, and Winnipeg was chosen for the next regional convention in March 1959.

The officers authorized the expenses involved in preparing master recordings of the tape recordings made during the educational conference. Tapes of each talk will be available to chapters in the association.

heat pump

Profit Packages

by **Gibson**

Gibson's highly versatile packaged heat pumps are designed for low-cost operation, simple installation. In the Gibson line there's a unit for every type of residential and commercial installation. No plumbing is required. Gibson packaged heat pumps are exactly engineered to meet FHA requirements. Call your Gibson distributor today for all the profitable details on these packaged units.

*Gibson Refrigerator Company • Greenville, Michigan • Division of HUPP Corp.

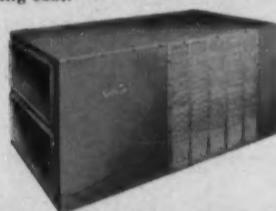


Gibson packaged air cooled air conditioners

Model GO-21A — Full 2 H.P. Delivers rated capacity of 22,000 BTU/HR at ARI standard conditions. Easily installed. Can be used with or without duct work.

Model GO-31A — (Illustrated) Full 3½ H.P. Delivers full rated capacity of 35,000 BTU/HR at ARI standard conditions. Has two 1¾ H.P. compressors. Can be used with or without duct work.

Model GO-50 — Full 5 H.P. Requires no water, cools even the largest homes. Equipped with two 2½ H.P. compressors for maximum efficiency, low operating cost.



Gibson packaged thermomatic heat pumps

Model GO-21AH — Capacity for cooling at ARI standards 21,000 BTU/HR — for heating 50,000 BTU/HR*. Light weight, easily installed.

Model GO-31AH — Full 3½ H.P. Can be used with or without duct work. Has two 1¾ H.P. compressors that deliver full-rated capacity of 34,000 BTU/HR for cooling, 77,000 BTU/HR* for heating.

Model GO-50H — (Illustrated) Full 5 H.P. Equipped with two 2½ H.P. compressors that will deliver full-rated capacity of 48,000 BTU/HR for cooling, 108,000 BTU/HR* for heating.

*At 45° outside temperature, with supplementary duct heater.

Window Air conditioners and Heat Pumps by Gibson



You're in the heating and cooling business with both feet when you handle Gibson. In the new line of Gibson window units, there's an air conditioner and heat pump for every purse and purpose. Get the complete story on both types of units from your distributor.

get going... get Gibson

Be a real go-getter

You can go get a

\$10,000

College Scholarship

for your son or daughter*



2500 other wonderful prizes to choose from!

Sell the greatest line of icemaking machines and be a winner in the

Carrier Icemaker's "Prize Future Unlimited" Contest



- * Or any other student of your choice!
- You win on every sale!
- Fair handicap system gives everyone an equal chance!
- 4 big Regional Awards!
- 3 Runner-up Prizes!
- Bonus Awards!
- Contest starts May 5th!

For the whole big story **CALL YOUR DISTRIBUTOR**
OR MAIL THE COUPON NOW!



**AIR CONDITIONING
REFRIGERATION**

Dealers: take advantage of Carrier's sales promotion tools to help your salesmen win in this contest—and fatten your own profits as well. Order this material, and stock, from your distributor at once.

CARRIER CORPORATION, Carrier Parkway, Syracuse 1, N. Y.

Without obligation or cost on my part, tell me all about how I can be a real go-getter in Carrier Icemaker's "Prize Future Unlimited" Contest.

Name _____

Company _____

Address _____

Educational Program Warns Contractors Against 'Amateur Wholesalers; Advises 'Deal with Certified Wholesaler'

NEWARK, N. J.—The opening guns of a long-range "educational barrage" have been sounded by a group of wholesalers operating in the New York and New Jersey area.

This organization, known as the Metropolitan Refrigeration and Air Conditioning Wholesalers' Association, Inc., is an affiliate of the Air-Conditioning & Refrigeration Wholesalers.

"Because every one of the 18 member firms of the former group meets the most exacting requirements as highly qualified specialists in the field and because each concentrates its facilities and resources on the wholesaling of refrigeration and air conditioning supplies and equipment, the 'Metropolitan Association' decided to tell its collective story to every prospective contractor," an announcement stated.

'OFFER WELCOME GUIDANCE'

Realizing that refrigeration and air conditioning installations are being made by a constantly growing number of contractors in the plumbing, oil burner, heating, and sheet metal fields, as well as by refrigeration and air conditioning contractors, the Metropolitan Association felt it could offer welcome guidance regarding the fitness of its members to serve these contractors."

The announcement declared that "Surveys conducted by the Metropolitan Association show that, in this rapidly expanding field, jobbers of every description have been picking up odds and ends of refrigeration and air conditioning supplies and equipment in an effort to add this new business to the miscellaneous lines they already carry."

Claiming that "the invasion of 'amateur' non-specializing wholesalers has served to confuse contractors," the announcement said the Metropolitan Association "decided on a program of clarification to tell contractors why it pays them to deal with its 18 specialist members who are known as 'Certified Wholesalers' in the field."

The following are the announced fundamentals:

"1. All members will be identified as Certified Wholesalers of Refrigeration and Air Conditioning.

"2. Each member will be given a large panel depicting the 'Certified Wholesaler' emblem, such panel to be displayed on his premises.

"3. Each member will be supplied with line cuts of the emblem for use in advertising, printed literature, and other promotional material.

"4. Gum-backed metaline seals of the emblem will be furnished to each member for use in letterheads, business cards, and other stationery.

"5. All emblems will carry the current year, thus protecting current members and contractor prospects from misrepresentation by unauthorized wholesalers.

"6. A series of unique mailing pieces, posted about a month apart, will carry the story of

the Certified Wholesalers to all prospective contractors. These colorful brochures will vividly convey, by means of amusing cartoons and whimsical text, the importance of dealing with Certified Wholesalers of Refrigeration and Air Conditioning.

"7. Individual members will tie in with this group effort and follow through to get their share of the increased business.

"8. Important makers of refrigeration and air conditioning equipment will receive copies of all Metropolitan Association mailings so they may be kept posted regarding the efforts."

Current officers of the Metropolitan Association are Milton C. Reese, president; Warren R. Kahn, secretary and treasurer;

and Albert Hofeld, chairman of the Advertising Committee. The following is a list of member firms authorized to identify themselves as "Certified Wholesalers for 1958":

Abco Refrigeration Supply Co., New York City; Aetna Supply Co., New York City; Air Conditioning Supply Co., Inc., Long Island City, N. Y.; The Harry Alter Co., Inc., New York City; M. Blazer & Son, Passaic, N. J.; The Capson Co., Inc., Brooklyn; Coleman Electrical Supply Co., Brooklyn; Eastern Supply Co., Mt. Vernon, N. Y.; Excel Refrigeration Supplies, Inc., Brooklyn.

Also, W. I. Freeman & Co., Inc., Newark; Halsey Supply Co., Brooklyn; Albert Hofeld, Inc.; Paramount Electrical Supply Co., Inc.; Reese & Long Refrigeration Products, Inc., all of New York City; Schwartz Supply Co., Bronx, N. Y.; Tesco Distributors, Inc. and Wallwork Bros., Inc., Newark; and Wholesale Distributors, Inc., Jamaica, N. Y.

To qualify as "Certified

Wholesalers," members "must posted regarding the latest developments in the field, and measure up to Metropolitan Association's exacting standards," it was stated. "The following quotation from the initial mailing piece spells out these qualifications:

"With today's endless developments in the field of refrigeration and air conditioning, the efficient wholesaler should meet these requirements:

"1. He must be a specialist in refrigeration and air conditioning.

"2. He should concentrate his efforts and his capital mainly in this field.

"3. He should offer you the widest possible choice of worthy competitive makes.

"4. He should stock a good supply of equipment of each such make, to be able to give you what you want, when you want it.

"5. He should keep you

posted on time, and not forcing substitutes on you, he should help you avoid costly mistakes and thus contribute to your net profits.

"The firms listed on the 'Honor Roll' printed on the back of this sheet fill all of these requirements."

The plan and program materials have been copyrighted by the W. N. Scheer Advertising Agency and, with the full consent of the Metropolitan Association, will be made available in individualized form, on a syndicated fee basis, to qualified associations affiliated with the national association known as "Air Conditioning & Refrigeration Wholesalers."

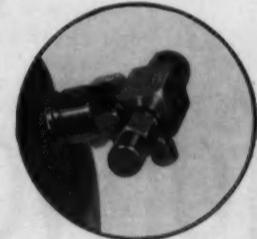
Tecumseh engineering VISION offers you a complete line for year-around air conditioning, priced to expand your market!

By continuous improvement and expansion, Tecumseh hermetic compressors today represent the most complete and up to date line in the industry. And as an example of our constant cost reduction program, the Tecumseh 3 HP single phase compressor shows an overall price reduction of 24% since 1953 in spite of continually rising prices.

Tecumseh compressors effectively utilize suction gas to dissipate motor heat — run smoother and quieter — deliver full capacity at 90° ambient with a 45° coil . . . continue to cool even at 120° ambient or at 90% of rated voltage! Tecumseh mass production facilities offer economical choices of hermetic compressors in:

- Horsepower ranges from 1 to 5 HP
- BTU ratings from 10,700 to 62,500
- Internal and external mount models
- Single and three phase
- Air or water cooled application
- Low sound level operation
- Optional oil level sight glass
- Choice of tubes, solder valve, or Rotalock Valve

Your best interests are continually served at Tecumseh. Write your Tecumseh District Office for the best solution to your central system requirements today!



ROTALOCK VALVE
Multi - position, detachable valve — permits positioning of suction and/or discharge connections at any angle throughout 360° while maintaining a positive pressure seal.

THE COMPLETE COMPRESSOR LINE—ENGINEERED

Models B1516, B1613

1 HP, single phase, twin cylinder. 11,500 and 12,350 BTU ratings. External mount, air cooled compressors charged with F-22. Primarily designed for self-contained air conditioners.

Model B32P16

1½ HP, single phase, twin cylinder. 16,500 BTU rating. External mount, air cooled compressor charged with F-22. Ideal for small attic installations, operated singly or in tandem.

Models B74T16, B21T18

2 HP, single phase, twin cylinder. 20,000 and 23,400 BTU ratings. External mount, air cooled compressors, charged with F-22. 2 HP compressors designed to broaden the central systems market.



The Leader Serving Leaders In The Air Conditioning And

TECUMSEH PRODUCTS

EXPORT DEPT. — P.O. Box 2280, 24530 Michigan Ave.,

NAHB 'Strives for Ultimate Type of Home Air Conditioner'



Proudly pointing to experimental heating and air conditioning unit installed in sales for Frigidaire Div., General Motors Corp. Complete installation can be handled by two men, he says. Evaporator coil, sleeve, and condensing unit are one sealed research institute, notes that air conditioner literally plugs in.

Research House Has 'Plug-In' Sealed Unit

By George M. Hanning

CHICAGO — What the research institute of the National Association of Home Builders considers to be the "ultimate type of air conditioning equipment toward which we must strive" was demonstrated at the association's recent convention.

The "ultimate" was personified by a unit Frigidaire Div., General Motors Corp., built for installation in NAHB's research house in Kensington, Md. last summer.

It consists of a condensing unit, sleeve, and evaporator coil all in one sealed unit that can be slipped into an opening in the side of the house for plug-in operation.

While the Frigidaire unit was developed for and installed in NAHB's research house, a number of other air conditioning equipment manufacturers showed similar equipment at the NAHB exposition.

LIKE 4 FEATURES

Features the builders like about it included:

1. It will work equally well in a slab type house and a house with basement. Cooling coil would fit on top or below the furnace, depending on house construction.

2. It can be installed by two men, who need only slip the cooling coil through the previously constructed opening in the outside wall of the house and rest the condensing unit on a bracket support.

3. Because the unit is close coupled, faulty workmanship on part of installer is eliminated and a minimum of trades is required.

4. All service work can be done on the outside of the house. Cooling coil can be slid out as it was slid in and returned for replacement if necessary.

PRODUCTS DESIRED

Martin Bartling, who led the discussion and demonstration of new equipment developed for the research house, declared that this was the first time that builders had actually decided what new products they wanted in the home and asked the manufacturers to develop them.

The air conditioning unit was one of these.

By working with the manufacturers in this way, Bartling declared, the builders are saving them hundreds of thousands of dollars in wasted experimental effort in developing products that won't be used and helping to get new products placed on the market at a quick rate.

Among the other products developed for the home that could have a bearing on future home air conditioning are self-venting gable end siding for under-roof cooling and under-eave soffit of ribbed hardboard, perforated to admit air.

The Frigidaire unit had been labeled as an experimental model. But at the show, Frigidaire announced that it is now in production.



TO YOUR INDIVIDUAL SYSTEM REQUIREMENTS



SINGLE PHASE

Models JE200, JB200, JE300, PJE300

2 and 3 HP, twin cylinder. BTU ratings from 22,500 to 38,000. All models except JE200 charged with F-22. Internal mount hermetic compressors available for air or water cooled operation. Designed for



THREE PHASE

complete flexibility, along with economical mass production to fill the exacting requirements of the year-round air conditioning customer.



Model FB300

5 HP, single phase, four cylinder compressor. 62,500 BTU rating. Charged with F-22. Fully hermetic external mount compressor for large residential air conditioning and similar applications.

Refrigeration Industries

COMPANY

West Dearborn, Michigan

MARION, OHIO

TECUMSEH, MICHIGAN

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)
and learn what they are doing re refrigeration, air conditioning, heating, etc.

For American readers, we trust that the "Inside Dope" reports on this trip will be both enlightening and entertaining.

Air conditioning and refrigeration abroad depends on American industry—and America's export of cooling equipment is a big, profitable business for U.S. manufacturers and suppliers.

Strange conditions and problems of those who sell and install our equipment abroad should make for fascinating reading—we hope.

And, "Dope" promises you, he'll work hard all along the way to report what he sees.

SEND FOR REPRINTS

Product Knowledge, Protective Maintenance, Trouble-Shooting, Adjustment, Repair of Electric Motors.

Only 40¢ each.

For your copy, clip this ad and mail with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

**Big News for the Future**

Soon we'll have a machine to convert the energy of heat—especially solar or fusion heat—directly into electricity.

Two professors at the Massachusetts Institute of Technology already have invented such a device. It is, of course, a silent engine with no moving parts. And it removes the wasteful "middlemen" which previously have dissipated so much energy. Eventually such a system will supplant complicated steam or internal combustion engines—which now drive dynamos to convert heat energy into electric power, or explode gas in cylinder—with relative inefficiency.

These thermo-electron engines will draw electricity directly

Itinerary for Inside Dope's "Around the World In 50 Days"

Thanks to the Australian Institute of Refrigeration, which is sponsoring Editor-Publisher George Taubeneck's lectures in Australia, "Inside Dope" will visit Air Conditioning & Refrigeration News subscribers all around the world from late April through early June.

Following is a tentative itinerary for his "Around the World In 50 Days" reporting journey. Subscribers in the cities and nearby areas listed, please note. "Inside Dope" would like to interview you.

April 21-25	San Francisco, Honolulu
April 27-30	Melbourne, Adelaide in Australia
May 1-11	Sydney Australia. (Address Box 4962, G.P.O., Sydney)
May 12-14	Singapore
May 15-16	Bangkok
May 17-21	Karachi, Bahrain, Beirut
May 21-24	Istanbul, Athens
May 25-28	Rome, Barcelona
May 29-June 6	Paris, Brussels, Frankfurt, Copenhagen.
June 7-10	London, New York City (London address: Cumberland hotel.)

Inasmuch as exact dates for arrivals in cities from Singapore to Paris are impossible to predict at this time, subscribers are advised to expect Taubeneck's arrival either two days before or after the days scheduled above.

from fusion power reactors, or generates an electric current. from the sun, with much greater economy than fossil-fuel engines or converters now produce.

They also could power space ships, sneakily silent military vehicles, and even autos.

Working principle of the thermo-electron engine is ultra-simple. Two metal plates are enclosed in a vacuum. Both are heated, but one is much hotter than the other. A stream of electrons pours from the hotter plate to the cooler one. This

Man, progress is just beginning!

Screwball Mottoes

Promising rebellion against our deplorable Age of Conformity has sprung up—happily. Its manifestation: oddball mottoes, circulated surreptitiously.

There's even a "Let's Have Better Mottoes Association," squired by Fred Gymer and Allen Prymmer of 2123 East Ninth St., Cleveland, which operates out in the open.

God bless! They're helping revive the spirit of individual creativeness. And they're combatting corporate dullness—as exemplified by the stereotyped "Organization Man."

Samples of these reviving mottoes:

"Count that day lost when you don't catch hell about something."

"Accuracy is our goal. We never make misteaks."

"Think! Maybe we can dodge this work."

"Don't just do something. Stand there!"

(Concluded on next page)

NEW

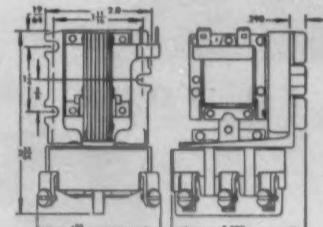
"Cost Cutter" from

RBM



Type "S"
30 Amp. Air
Conditioning
Contactor

Exceeds rigid requirements of industry's largest users. Application proven for long life... trouble-free performance. Positive contact action. No "kiss" position. Can be made to mount in any position. UL Approved File No. E-12139.

**SPECIFICATIONS**

Contact ratings	30 Amp. continuous, 180 Amps inrush at 230 volts.
Contactor terminals	Screw type.
Coil terminals	Double quick connect, screw type, or lead wires.
Coil rating	6 to 230 V.A.C.—50/60 cycles.
Pole arrangement	2 or 3 poles (2 dummy wiring terminals available on 2 pole device).

Consult your RBM Product Application Engineer or Write for Bulletin C-8.

RBM
DIVISION
ESSEX WIRE CORPORATION
Logansport, Indiana

Westinghouse is selling central air conditioning the way it should be sold

IN THE MAY ISSUE OF HOUSE BEAUTIFUL**FIRST PUBLIC SHOWING**

...the greatest air conditioning story ever told!

ON NEWSSTANDS TODAY!
DON'T MISS IT!

Westinghouse COMFORT COMMAND

a new way to sell air conditioning

YOU CAN BE SURE...IF IT'S Westinghouse

Air Conditioning Division, Westinghouse Electric Corporation, Staunton, Virginia

J-80069

We Specialize In
Cleaning & Balancing Large
Air Conditioning and
Ventilating Duct Systems

We Go Anywhere

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CLEANING SERVICE

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500 W. Willis, Detroit, Mich.
Phone Te 1-2707

56 Refrigerated Equipment Mfrs. To Exhibit at Restaurant Show

CHICAGO—Some 56 manufacturers of refrigerated equipment will exhibit their newest products for the food service trade at the 39th annual National Restaurant Convention and Exposition here May 5-9.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from preceding page)

"No reason for it—just company policy."

"Keep your eye on the ball, your ear to the ground, and your shoulder to the wheel. All right, let's see you work in THAT position."

"You have a perfect right to your opinion, provided it agrees with mine."

"Now is the time for all good men to come to."

"Don't work so hard. There are a lot of us here."

"You buttered your bread. Now lie in it."

"Having lost sight of our objective, let us redouble our efforts."

"You can fool some of the people some of the time and that's often enough."

"I'm willing to be reasonable but you are asking for money."

"Let's approach every problem with a completely open mouth."

"What can you expect of a day that begins with getting up in the morning?"

"Work fascinates me . . . I can sit and look at it for hours."

"If you have a minute to spare, tell me all you know."

"My mind is made up . . . don't confuse me with facts."

"Looking for someone with a little authority? I have as little as anyone."

"Use your head, it's the little things that count."

"I'd like to compliment you on your work. When will you start?"

"I'm not naturally stupid—I've been practicing."

"I may not be wrong, but I'll bet I'm close to it."

"If you can't convince 'em—confuse 'em."

"Don't tell me what I mean—let me figure it out for myself."

"We loused it up once. Let's do it again."

"I've heard so much about you. What's your side of the story?"

Air Conditioning Note

In Federal District Court in Jacksonville, Fla., a prospective juror asked to be excused on the ground that the courtroom air might aggravate his asthmatic condition.

Hissner pointed out coolly that the courtroom was air conditioned.

"By the way," the judge inquired, "where do you work?"

"In a fertilizer factory, Your Honor," the man answered.

After a moment of reflection, the judge observed dryly: "I'm sure you will not find the air in the courtroom unbearable."

The exposition will be staged food appeal, it was reported at the Navy Pier.

Show hours are as follows: Monday (Dealer Day): 9 a.m. to 6 p.m.

Tuesday, Wednesday, Thursday: 8:30 a.m. to 6 p.m.

Friday: 8:30 a.m. to 4 p.m.

Highlights of the exposition will be a model drive-in, completely equipped and covering 2,400 sq. ft. of space.

"Upgrade for Profit" is the convention theme. Program is geared to upgrading all phases of restaurant operation—menus, service, training, atmosphere, efficiency, public relations, and

air conditioning.

Manufacturers of refrigerated equipment scheduled to exhibit at the exposition, with their booth numbers, are as follows:

Company	Booth No.
Allimetal Food Equipment Corp.	C178
American Automatic Ice Machine Co.	D98-100
American Gas Machine Co.	D214-218
Anheuser-Busch, Inc.	C260
Bally Case & Cooler Co.	C155
Bastian-Blessing Co.	C69, 74
Brewer-Titchener Corp.	D329, 331
Carbonic Dispenser, Inc.	B35
Carrier Corp.	D258, 260
Elliott-Williams Co.	D177, 181
Frigel Refrigerator Co.	A51-53
Foster Refrigerator Corp.	A34-36
Freez King Corp.	D240-242
General Equipment Sales, Inc.	B258-260
Glenco Refrigeration Corp.	C137-139
Herrick Refrigerator Co.	D92-96
Howard Refrigerator Co., Inc.	C97
Jet Spray Corp.	B139
Jordon Commercial Refrigerator Co.	A45
Kelvinator Div., American Motors Corp.	D273
Stanley Knight Corp.	C1, 5, 7
Koch Refrigerators, Inc.	B109, 110, 112
La Crosse Cooler Co.	D146-148
Leitner Equipment Co.	D164-172
Lern, Inc.	B-153
McCall Refrigerator Corp.	C94
Mallow Products, Inc.	B57
Midwest Mfg. Co.	D283
Wyott Mfg. Co.	C11



DRYNESS

best reason in the world for specifying

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SUPER-DRY
REFRIGERANTS

QUICK FACTS on GENETRON Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content.
- Nontoxic, nonflammable, stable, safe.
- Critical and freezing points well outside range of operating uses.
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil.
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated

hydrocarbons meeting the same strict refrigerant specifications.

• Available everywhere, from refrigeration wholesalers throughout the country.

GENETRON 11 ORANGE LABEL CCl₃F

Trichloromonofluoromethane

GENETRON 12 WHITE LABEL CCl₂F₂

Dichlorodifluoromethane

GENETRON 22 GREEN LABEL CHClF₂

Monochlorodifluoromethane

GENETRON 113 PURPLE LABEL C₂Cl₃F₃

Trichlorotrifluoroethane

GENETRON 114a BLUE LABEL C₂Cl₂F₄

Dichlorotetrafluoroethane

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N.Y.



Firm Launches 'Running Start' Customer Contest, Dealer Bonus To Boost Sales

MINEOLA, L. I., N. Y.—On March 21, Long Island Lighting Co. launched a "running start," pre-season air conditioner sales campaign to be carried on for 10 consecutive weeks, through May 31.

"Air-Mada," as the program is called, includes a customer contest with 10 major prizes, a dealer bonus schedule, advertising support by LILCO, and dealer advertising, it was explained.

LILCO's promotion is detailed in a kit provided to all dealers, including samples of promotion materials (company ads, bill enclosures, radio spots, sales report forms, advertising

schedule, and contest entry forms).

Prime feature of the promotion to stimulate consumers' interest is the Air-Mada prize contest. Entrants complete the sentence—"I bought my new air conditioner early because . . ." in 25 words or less. To qualify, the entrant must be a LILCO customer and must purchase an air conditioner, or full house air conditioning.

The 10 prize winners will receive reimbursement of the full cost of the air conditioner up to 1 hp., or have the option of choosing a similar air conditioner for another room in the house. Contest forms will be provided through appliance dealers and at LILCO offices.

LILCO's advertising campaign will include 80,000 lines of advertising in daily and weekly newspapers, 10-second and 1-minute radio spots scheduled for saturation listening times, bill enclosures to reach all LILCO's 500,000 customers in a complete billing cycle, local office displays and dealer displays such as window banners and point of sale displays.

Dealers are being urged to add their advertising efforts by scheduling ads to run the same day as LILCO ads. Every effort is being made to aid the dealer.

He reported that 100 new dealers from Tennessee, Alabama, and Georgia bought mostly 1½-ton air conditioning units while the 2-ton jobs received more attention this year than last.

21 Through-Wall Units Condition New Plant Office

HIGH POINT, N. C.—The modern, recently constructed Marietta Paint Co. office building here has been newly air conditioned.

For the comfort of the company's good-size office staff, the building has been outfitted with 21 "through-the-wall" ¾ and 1-hp. Airtemp "Imperial" room air conditioners.

Citing some other installations of the compact, no outside extension, built-in type conditioners, Airtemp said five of New York City's newest and largest apartment developments features the in-the-wall conditioners. For Manhattan's fashionable new Coliseum Park Apartments, which were completed this past fall, 1,350 of the conditioners were used.

Elsewhere throughout the country, two major hospitals and numerous hotels and motels have in recent months selected the wall-type units for individual room temperature control.

Newly air conditioned departments of the prominent North Carolina paint firm include: reception room, conference room, general manager's office, and purchasing office.

The majority of the in-the-wall units include heating coils. As the weatherman dictates they can furnish either summer or winter comfort.

The company's spacious general office is served by a new 5-ton "packaged" system.

Designs Midget ½-Hp. Portable Room Unit for Quick Installation In Casements

MASPETH, N. Y.—A midget air conditioner designed specifically for casement windows has been added by Fedders-Quigan Corp. to its portable "Minute Mount" series.

Feature of the ½-hp. model is a new "Safety Fast" casement window mounting "that permits a complete installation literally within seconds," the announcement said. "No tools are necessary."

Earlier the firm introduced a ½-hp. Minute Mount portable for standard double-hung windows.

While Fedders does not suggest national list prices, Salvatore Giordano, president, claimed that for the price formerly paid to buy and install one casement air conditioner, a consumer would now be able to buy and install two units.

The two highlights of the Minute Mount casement, designated model 86CM-2, are its size and the method of mounting, according to Fedders. Measuring 14 in. wide, 10½ in. high, and 19 in. deep, the air conditioner weighs 71 lbs. It will fit into a casement opening of 10½ by 14½ in. and larger.

Fla. Area Cites 49% Gain

In 1957 Room Unit Sales

MIAMI, Fla.—Room air conditioner dealers in the territory served by the Florida Power & Light Co. sold more than \$14 million worth of units during 1957, the utility reported recently.

The 47,927 units they sold during the year represented a gain of 49% over 1956, when 32,099 units were moved.

Gross sales totaled \$14,378,100.

"Electrical wiring contractors also did an outstanding job during 1957 in selling full 'Housepower,'" the utility's Dealer Sales Developer publication declared.

"Of all new homes constructed in FPL served areas during the year, 56.8% were wired with 100 amp. or greater service entrance capacity compared with 45.2% during 1956," it was indicated.

With the glass removed from one section of the window, the Minute Mount is pushed through the opening until two clamps fall into place securing the unit to the casement bar beneath it. Two slide bars, operated by pushing two buttons outward, lock the air conditioner at the top to complete the installation.

A gasket, affixed to the cabinet at the factory, provides an automatic seal around the four sides. "As with Fedders' other Safety Fast mounting systems, the window sill or frame is never marred," it was pointed out.

The 86CM-2 is equipped with a built-in thermostat. A single control knob adjusts the thermostat, turns the unit on for cooling or just circulation. Two single speed fan motors and two washable filters are other features. It operates on 7½ amperes.

The cabinet is colored haze green while the decorative mesh screen on the face of the unit and the 360° adjustable louver is alpine white.

Production of the Minute Mount is scheduled to begin about May 1.

Room Unit Excise Tax Recovery Trial Date Set

CHICAGO—Closing arguments in the trial of suits in Federal court here brought by Cory Corp. and subsidiary Mitchell Mfg. Co. against a former district director of internal revenue seeking token recoveries on certain excise tax payments have been continued to May 9, it was announced here.

Judge Michael L. Igoe ordered each side to file a proposed judgment order before that date.

A 1954 ruling by the commissioner of internal revenue held that self-contained 1-hp. or more window air conditioners were not subject to tax, Cory and Mitchell claim. Ernest J. Sauber, defendant, admits this ruling but states the Cory and Mitchell window air conditioners had motor-driven compressors which were under 1 hp.

**IN THE MAY ISSUE OF
HOUSE BEAUTIFUL**
**FIRST
PUBLIC
SHOWING**
**... the greatest
air conditioning
story
ever told!**
**ON NEWSSTANDS
TODAY!
DON'T MISS IT!**

Westinghouse COMFORT COMMAND

a new way to sell air conditioning

YOU CAN BE SURE... IF IT'S Westinghouse

Air Conditioning Division, Westinghouse Electric Corporation, Staunton, Virginia

J-80570

**Will Pay Cash
For
ROOM - AUTO
PACKAGE
Units in
Original Crates**

THERMAL CONTROL CO.

2500 W. Sixth St., Los Angeles 57, Calif.

DUnkirk 3-4341

Bob Considine for Westinghouse

Stresses Properly Sized Air Conditioning System Fitted To Individual Home; Outlines 5 Steps to Life of Comfort

STAUNTON, Va.—In his own 'comfort level,' especially during critical periods and may International News Service columnist, tells what complete home air conditioning means to the user in the May issue of *House Beautiful* magazine now on the newsstands.

Entitled "Summer is Hell for Millions of People," the seven-page article is actually a paid advertisement by Westinghouse Air Conditioning Div., launching the company's spring campaign for residential cooling sales.

In the full-color article, Considine stresses that complete home air conditioning is not as expensive as the public might think. He tells in layman terms why a properly sized system custom-tailored to the individual home is essential, and outlines the five steps leading to a life of air conditioned comfort.

'LESS THAN HALF PRICE OF NEW CAR'

"Today's average home can be fully air conditioned for somewhat less than half the price of a new automobile," Considine asserts.

"People will use their air conditioning system during the summer months six to 10 times more hours than they will their car during the entire year," he declared.

He pointed out that an air conditioning system does not depreciate. Rather, it adds to the valuation of property. It will definitely improve the health and disposition of the family, he added.

"It is quite possible," he said, "that money spent escaping the torment of summer heat will more than pay for" air conditioning. He cited such expenditures as rental of summer cottages, cleaning and painting bills, changes of furnishing, and the cost of dining out as examples.

'COOLING HAS EVERYTHING'

"Strangely enough," he continued, "air conditioning has everything to offer. Pleasure, comfort, appetite, rest, quiet!"

"With a modest down payment, the owner of an average house can have it for less than \$25 a month."

"Operating costs? You can cool your entire home for an hour for as much as it costs to drive your car about a mile and a half."

Stressing the importance of having the cooling system properly sized, the Hearst columnist explained, "An underpowered unit simply can't maintain a

Residential Air Conditioning

family will be together.

2. When the dealer arrives—promptly, says Considine—he will make a complete survey. Considine outlined the steps he would take and the items he not.

tem for you," it was stated.

4. "Now it's your turn," Considine said. "Based on his proposal, you can now make your decision" to have or have

check.

"When he is finished," the columnist said, "he will know every single detail of your home and what causes it to become the 'oven' it is during hot summer months."

3. Back in his office, the dealer will calculate the home's requirements and select the right components to form "the perfect Comfort Command sys-

tem."



PRE-ATTRITED. At Davison, PA 400® Silica Gel is Pre-Attrited to give superior non-dusting qualities. First it's beaten up; then it's polished. All sharp edges and dust disappear. What's left is hard and tough . . . won't break down in drier service. So ask for the drier filled with Pre-Attrited PA 400. Both you and your customers will be happy you did. See your distributor tomorrow.

DAVISON
CHEMICAL COMPANY
Division of W. R. Grace & Co.
Baltimore 3, Maryland



NEWS ASKS COOLING DEALERS ABOUT '58

Poor Competition Seen as Chief Sales Obstacle; See Education, Better Ads as Sales Pushers

This is the final instalment of a series of articles based on a survey made by the News among several hundred leading air conditioning dealers and contractors on their prospects, plans, and problems in 1958. This instalment covers the questions "What do you consider to be the biggest obstacles to air conditioning sales?" and "Is there any one element that could give air conditioning sales a big push?"

Concerning the question "What do you consider your biggest obstacles to air conditioning sales? Price, manpower shortage, poor competition, bad installations in your area, poorly designed equipment, etc.," majority of the contractors seemed to consider "poor competition" their greatest headache.

As Robert L. Terrell of Farnsworth Heating & Supply Co., Bristol, Tenn. stated, our biggest obstacle is "Poor competition, price level down to a markup over materials cost, labor cost, of only 10 and 10." Terrell considers this "far too low for our type of operation. This is, however, the usual markup for plumbing contractors as well as the electrical contractors in this area, who only do air conditioning as a sort of sideline."

Thomas J. Garrard of D & G Air Conditioning Co., Tampa, Fla. believes price and manpower shortage are his two most troublesome points; Wier installations," he says, "and

poor service have given some facets of air conditioning a black eye which the legitimate operator must overcome.

"Most retail dealers do not realize that they cannot make money over a year's operation at the individual profit markups they are using," he points out. "In other words, they do not realize until the end of the year that they haven't made any profit, and at the same time they have been hurting the entire industry by continually pulling prices down."

O. B. Lund of the firm in Havre, Mont., charges that "Everybody's in the act. Manufacturer's advertising has left the homeowner with the impression anyone can install and service refrigerated air conditioning equipment and they are selling this equipment to practically any type of business. I predict the next four or five years will uncover many unhappy owners of residential air conditioning in particular."

Frank Self of A & M Supply Co., Inc., Ft. Worth, Texas feels that "Price emphasis, especially the competitive bid system whereby inferior equipment can be bid at a lower price and get the contract. Bad head is higher."

Biggest obstacle in the path of smooth functioning in the air conditioning business in the opinion of Ray Aldrich of the South Dakota firm by that name

WHAT'S YOUR BIGGEST SALES OBSTACLE?

6—What do you consider to be your biggest obstacles to air conditioning sales?

Poor Competition	43%	Lack of Public Understanding	5%
Price	41%	Cold Weather	5%
Bad Installations	18%	Tight Money	3%
Manpower Shortage	18%	Inventory Dumping	1%
Poor Equipment	11%	Misleading Advertising	1%
Poor Distribution		Short Lines	1%
Policies	5%		

WHAT WOULD GIVE SALES BIG PUSH?

7—Is there any one element that could give air conditioning sales a push?

Hot Weather	28%	Better Equipment	3%
Better Advertising	20%	Broader Lines	1%
Better Sales Outlets	13%	Fewer Brands	1%
Better Sales Training	11%	New Applications	1%
Easier Financing	6%	Rise In Economy	1%
Lower Price	4%		

is "Lack of realization of what air conditioning can do in the home outside of cooling."

R. L. Harris of Harris Bros. Co., Kansas City, Mo. says "The confused state of affairs, confusion in the minds of the buyers and some sellers that is, caused by untrained and misinformed people in the selling end of the air conditioning business is the biggest obstacle to proper sales."

He continues: "Misleading advertising, both by manufacturers and dealers, makes it very hard to sell a job which is properly engineered, installed, and serviced."

'PRICE, DISTRIBUTION METHODS' BLAMED

James A. Foley of Toledo says that he blames "Price and distribution methods" as the chief sins of the industry. "There are many sins in this category," it was said. "1) Department stores selling room units at less than dealer cost. 2) Wholesalers selling directly to industrial firms or builders in unit quantity at wholesale price. 3) Distributor-contractors competing with their own dealers. 4) Direct sales to dealers or installers regardless of license or qualification."

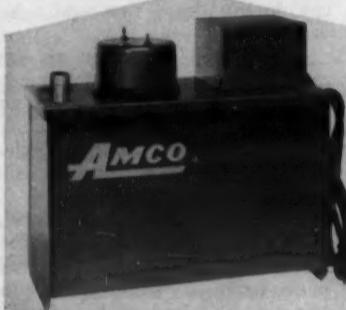
R. L. Woodman of Woodman Engineering Co., Jefferson City, Mo. indicates that "We consider the 'jackleg plumber' and his kind to be the biggest obstacle to good air conditioning sales. He does not have sufficient training or know how and the type of engineering help he gets from manufacturers or their representatives merely increases his foolishness."

CUSTOMERS RELY TOO MUCH ON BRAND NAME

Ward of Ward Air Conditioning Co., Orlando, Fla. now considers "our biggest obstacles in air conditioning sales, manpower shortage, poor competition, bad installations in our area, and consumers' ignorance of the importance of proper installation. Most consumers," he states, "assume that when they purchase a well-known brand of equipment, it will be properly installed by the franchised dealer and that the manufacturer's guarantee includes installation efficiency."

W. P. McCarty of McCarty (Concluded on Page 17, Col. 1)

AMCO
CONDENSATE PUMP
Combines QUALITY and PERFORMANCE WITH LOW COST



- Positive displacement electric switch w/float control
- Completely Automatic
- Small and Compact Size—6" x 9" x 13"
- Ready to Install

AMCO Condensate Pump has no equal for efficient, quiet, trouble-free operation . . . will remove cold or hot condensate fluid from receiver tank, boilers, air conditioning systems and pumps it to outside drain. Has 1/30 H.P. Motor, 20 ft. head (most powerful made—will deliver up to 371 G.P.H.) has 6 ft. heavy rubber cord, shock proof plug. Shipping wt. 13 lbs.

\$ 50.00

List Price Dealer Discount 50%. Add'l Discounts for quantity.

Don't break concrete! Save Time! Get More Jobs Done!

AMCO
AMERICAN COMFORT MANUFACTURING COMPANY

2401 Main Street
Evanston, Illinois
DAvis 8-9200

Send for literature and price list today.

Nothing like it before...
TREMENDOUS!

IN THE MAY ISSUE OF
HOUSE BEAUTIFUL

FIRST PUBLIC SHOWING

...the greatest
air conditioning
story
ever told

ON NEWSSTANDS
TODAY!
DON'T MISS IT!

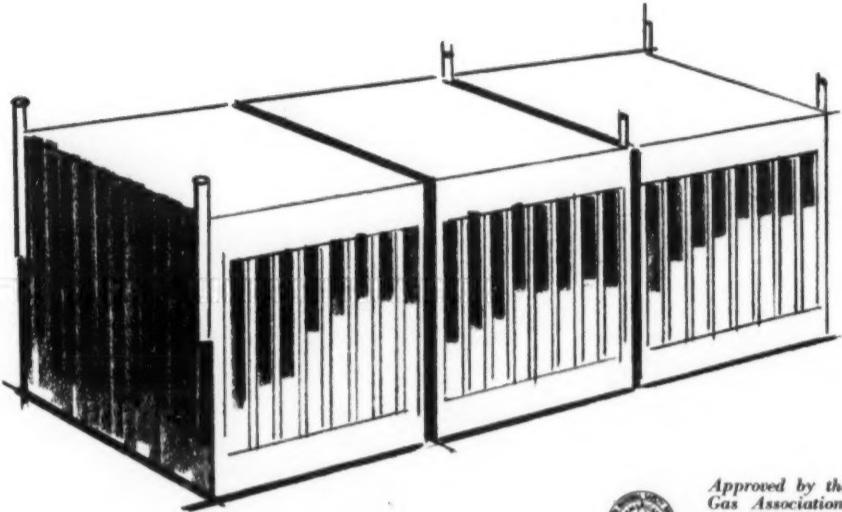
Westinghouse COMFORT COMMAND

a new way to sell air conditioning

J-50564

YOU CAN BE SURE...IF IT'S Westinghouse

Air Conditioning Division, Westinghouse Electric Corporation, Staunton, Virginia



Approved by the American Gas Association—furnished for operation on natural, manufactured, mixed, LP and natural-LP (dual-fuel) gases.

The Complete Line of Janitrol Duct Heating Equipment



DUCT-75, the all-new Janitrol design described above. Two basic units combined for any job from 200,000 Btu/hr., up to several million.



DUCT-55, individual furnaces in attractive casings. Available in five sizes 100,000; 125,000; 175,000; and 225,000 Btu/hr. inputs.



UNIT HEATERS, Model UCS, propeller-type ceiling-suspended, provide the lowest initial cost automatic heating. In 10 sizes, from 30,000 to 225,000 Btu/hr. inputs.



BCC, Blower Unit Heaters for use independently of central systems. Available with enclosed or exposed blowers with 300,000; 400,000 and 500,000 Btu/hr. inputs.



BLOWER PACKAGES designed for installation with minimum field assembly work. Series 75 has capacity range from 3,000 to 7,000 CFM; Series 135 has range from 6,000 to 13,500 CFM.

Technical Data

PRESSURE DROP (RESISTANCE) AND TEMPERATURE RISE AT VARIOUS FLOW RATES THROUGH SERIES DUCT-75

SIZE 300

CFM	1330	1500	1600	2000	2250	2400	2800	3000	3200	3400	3600	3800	4000
Resistance Inches Water	.043	.050	.059	.086	.105	.12	.155	.175	.20	.222	.240	.252	.290
Temp. Rise °F.	112	100	90	75	66	63	53	50	47	45	42	39	37

SIZE 300

CFM	2000	2250	2400	2800	3000	3200	3400	3600	3800	4000	4200	4500	4800	5100	5400	5700	6000
Resistance Inches Water	.043	.050	.059	.076	.086	.096	.11	.12	.13	.145	.155	.175	.20	.222	.240	.252	.290
Temp. Rise °F.	112	100	90	80	75	70	65	63	59	56	53	50	47	45	42	39	37

Performance Tables

WITH DIFFERENT MOTOR-DRIVE COMBINATIONS

SERIES 75

†Filter Pr. Drop Inches W.C.	*C.f.m. Delivery	○Static Pressure														
		Free Delivery	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4
.040	3000							A-½	A-½	A-½	A-½	A-½	C-1	C-1	C-1	
.05	3500							A-½	A-½	A-½	A-½	D-1	C-1	C-1	C-1½	
.07	4000							A-½	A-½	D-1	D-1	D-1	C-1	C-1	C-1½	C-1½
.08	4500							D-1	D-1	D-1	D-1	D-1	C-1½	C-1½	C-1½	C-2
.10	5000							D-1	D-1	D-1	D-1	D-1	C-1½	C-1½	C-1½	C-2
.13	5500							D-1½	D-1½	D-1½	D-1½	D-1½	C-2	C-2	E-3	E-3
.15	6000	D-1½	D-1½	D-2	D-2	D-2	D-2	D-2	C-2	E-3						
.18	6500	D-2	D-2	F-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3
.20	7000	F-3	F-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3
.23	7500	F-3	E-3	E-3												

SERIES 135

†Filter Pr. Drop Inches W.C.	*C.f.m. Delivery	○Static Pressure														
		Free Delivery	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4
.06	6000							A-½	A-½	A-½	A-½	D-1	C-1	C-1	C-1½	C-1½
.07	6500							A-½	A-½	D-1	D-1	D-1	C-1	C-1	C-1½	C-1½
.08	7000							A-½	A-½	D-1	D-1	D-1	C-1½	C-1½	C-1½	C-2
.10	7500							D-1	D-1	D-1	D-1	D-1	C-1½	C-1½	C-1½	C-2
.11	8000							D-1	D-1	D-1	D-1	D-1	C-1½	C-1½	C-2	C-2
.13	8500							D-1	D-1	D-1	D-1	D-1	C-2	C-2	C-2	E-3
.14	9000							D-1	D-1	D-1	D-1	D-1	C-2	C-2	C-2	E-3
.16	9500							D-1½	D-1½	D-1½	D-1½	D-1½	C-2	C-2	C-2	E-3
.17	10000	D-1½	D-1½	D-1½	D-1½	D-2	D-2	C-2	C-2	C-2	C-2	E-3	E-3	E-3	E-3	E-3
.19	10500	D-1½	D-1½	D-1½	D-2	D-2	D-2	C-2	C-2	C-2	C-2	E-3	E-3	E-3	E-3	E-3
.20	11000	D-1½	D-2	D-2	D-2	D-2	D-2	C-2	C-2	C-2	C-2	E-3	E-3	E-3	E-3	E-3
.23	11500	D-2	D-2	D-2	D-2	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3
.24	12000	D-2	D-2	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3	E-3
.27	12500	F-3	E-3	E-3	E-3	E-3	E-3									
.28	13000	E-3	E-3	E-3	E-3	E-3										
.30	13500	E-3	E-3													

bold type indicates standard motor and drive.

† Pressure drop through filters based on clean filters.

* Standard Air.

○ Static pressure of a system is the summation of all resistances including that of the duct system, heater, coils, etc.

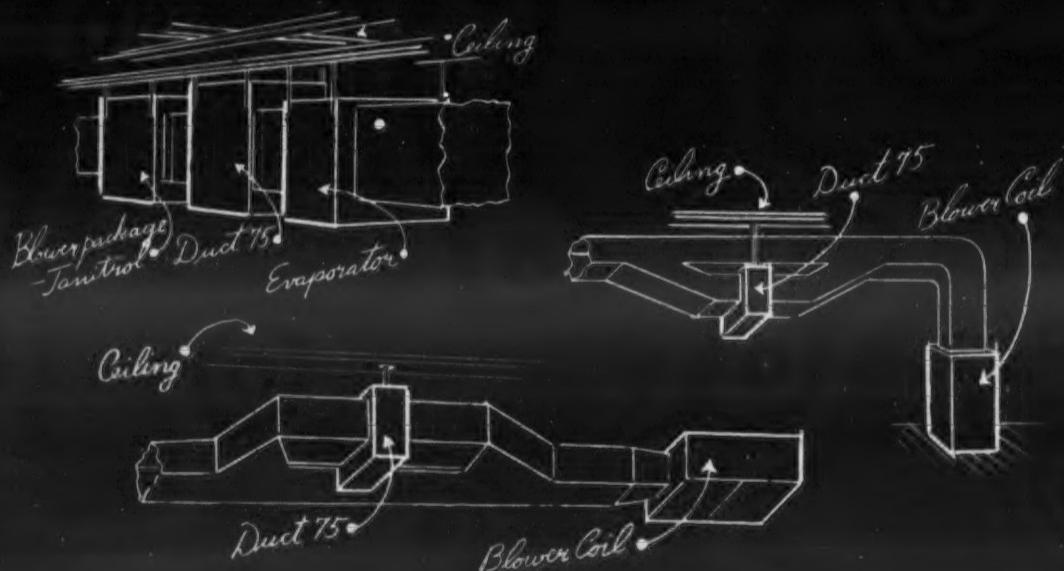
FOR YOUR CONVENIENCE,
SCALE TEMPLATES



Versatile-to-the Nth degree!

new JANITROL
duct 75 furnaces

for commercial-industrial heating and ventilating
and specially designed for use in year 'round systems.



Templates 1/4" Scale

DUCT FURNACES						
88-55	100-55	125-55	175-55	225-55	200-75	300-75
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

BLOWER PACKAGES						
75	135	75	135	75	135	
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

TOP VIEW

FRONT VIEW

SIDE VIEW

TOP VIEW

FRONT VIEW

SIDE VIEW



HEATING & AIR CONDITIONING DIVISION
Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Moffats Ltd., Toronto

Educational Program Urged--

(Concluded from Page 12, Col. 4)

Bros., River Forest Ill. says he takes a dim view of the present setup. "Contractors who are in the air conditioning business who do not have any business in this business" are our biggest trouble. "They apparently don't know what their costs are, consequently they look to the manufacturer for cost advice and guidance."

Burt Linne of Air Conditioning Maintenance Co. sited in Chicago terms an "inadequate sales force" a source of woe. "Lack of capital to do a good job of promotion" is another sore spot, as is "extreme shortness of sales season." He says "First two items strictly temporary and season is lengthening due to increasing consumer knowledge of what climate conditioning really is."

Al Dorr of Comfort, Inc. located in Oklahoma City holds that "poor competition—competition from big names in the field but stripped down or cheap equipment" is his chief source of worry. He says, "shortage of really qualified sales engineers" is a back-breaker, too.

Tom Ryan of Murphy & Miller, Inc., Chicago dealership finds that "Market conditions and weather since July 1 last year left inventories." This, he says, "causes reduced selling prices, causes cuts in quality, causes customer suspicion, causes 10 prices."

Deluxe, Standard Lines Needed

L. T. Worness of Bud Worness Heating & Air Conditioning, Pomona, Calif. has a list of complaints. "Too short a line of equipment. Most buyers like to make a choice for themselves. Between high, medium, and low price merchandise. To do this in air conditioning they must call in our competitors," he charges. "This is not good since no two engineers will figure the same way, nor do they have the same overhead or the same service to offer."

Concludes Worness, "Thus it is impossible for the (home) owner to make an intelligent choice. If a manufacturer would offer a deluxe and a standard line, the owner will be able to pick a price range without a change in the ductwork or services."

Guido Restagno of Resco Air Conditioning & Heating Co. of Chicago declares "Poor competition and bad installations and equipment sold by people that do not understand the installation and servicing of air conditioning equipment. They," he says, "do not know what they are really selling."

Frank Bader of Bader's Sales & Service, Inc., Highland Park, N. J. contends that "Most jobs with no specification are figured so low that a proper working job cannot be installed. Therefore the job suffers from lack of proper duct sizing, proper register sizes, and in many cases, lack of proper condensing unit size."

A. C. Rochat maintains "The contractor who does not know his costs is the greatest hazard to our generally making a profit."

Some contractor-dealers had

quite a bit to say on the final question: "Is there any one element that could give air conditioning sales a big push?" ("Hot weather" got the most mentions, but obviously it is something about which the industry can do little.)

Bob Terrell stressed "Talk comfort—not prices and parts and pieces" to give sales a boost. "Stress at national level the competent dealer is the best to trade with and capacities of the better class of equipment," he urged. Put out "more advertising to make the country more air conditioning conscious. The larger manufacturers should be on nationwide TV," he indicates.

"Make people 'snob' conscious insofar as air conditioning is concerned. The type of advertising that makes one believe that if he does not use a cer-

tain kind of deodorant, hair tonic, or bath soap, he will be tossed out of the 'social register.'"

Tom Garrard advocates "an educational program from the manufacturing level through distributors and by dealers informing the public about the advantages of air conditioning from a health standpoint."

J. A. Wier, Jr., White & Wier, Inc. of Athens, Ga. states he believes "manufacturers uniting in promoting so their dealers could get that automobile, appliance, or furniture dollar" would be a "good idea." He says "Competition between dealers is no problem. Manufacturers qualifying their dealers and insisting on a dealer instead of a 'backyard' outfit" would be advantageous.

One southern contractor feels that "Manufacturers' national advertising must be directed toward creating a desire for air

conditioning rather than toward their particular equipment, etc. and buy."

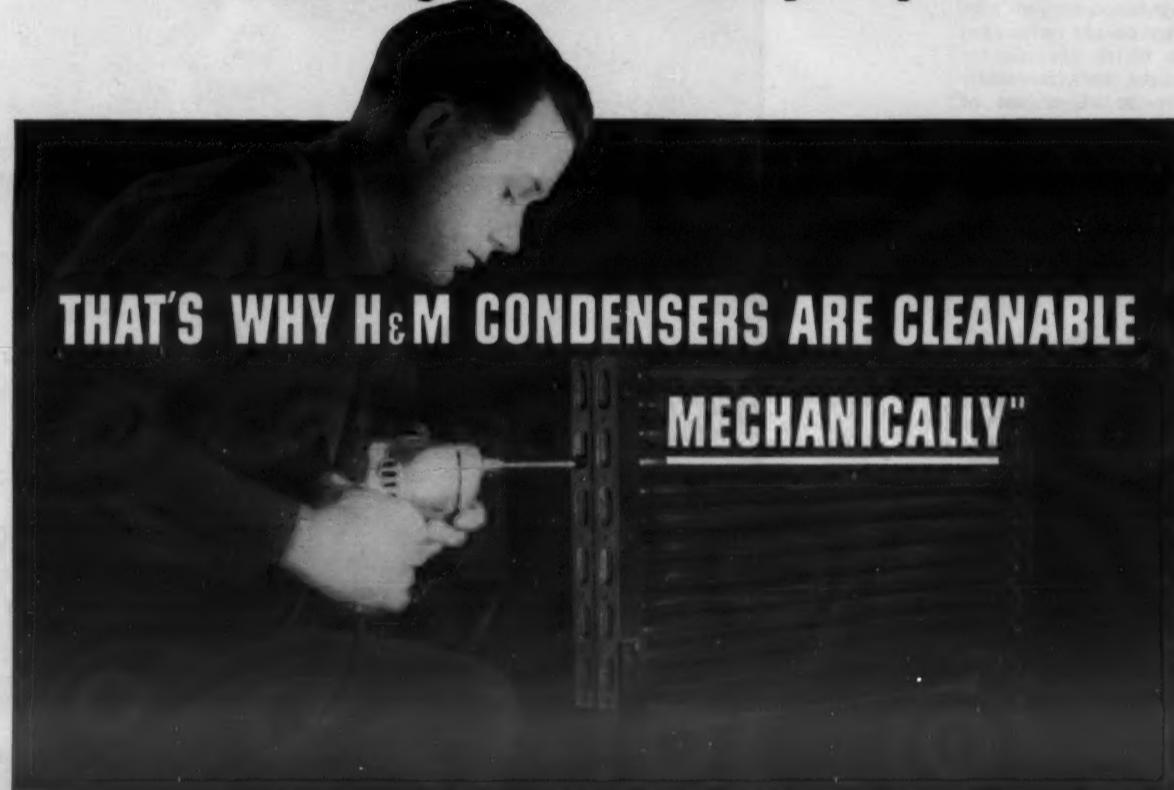
N. V. Bearden of Desert York Co., Las Vegas, Nev. dealer, thinks "Although our manufacturer had done a 'terrific' job in holding the line against price increases and has even lowered prices, I still feel the cost to the consumer could be the one element that is holding back sales."

Woodman contends that "Realistic advertising by manufacturers and public education to assist the public to be more discerning and discriminating" would be the best sales push.

Taylor Ward adds to that: "I believe the one element that would give air conditioning sales a big boost is for manufacturers to promote confidence in the consumer of a satisfactory installation. When a poor installation is made the consumer always blames the manufacturer."

SO HALSTEAD & MITCHELL ENGINEERS SAID:

"Harsh chemical cleaners ruin condensers, cooling towers and pumps



THAT'S WHY H & M CONDENSERS ARE CLEANABLE
MECHANICALLY

Scale and sludge which reduce heat transfer can be removed easily from Halstead & Mitchell Cleanable Water-Cooled Condensers. A simple, spiral cleaning tool—available from your local H & M distributor—and an ordinary electric drill can be used to clean the water tubes safely, mechanically. No need to use strong chemicals, which can seriously shorten the

life of your condensers and ruin cooling towers and pumps, too.

H & M Condensers have double-tube design, seamless copper tubes. Counterflow of refrigerant and water assures maximum heat exchange. Brass headers are quickly removed for cleaning. All H & M units are U/L approved for use with Refrigerants 12 or 22.

ALL H & M WATER-COOLED CONDENSERS ARE CLEANABLE

STANDARD DUTY (Type EL) are made with extended surface water tubes. Ideal for water-cooled systems under all average conditions. $\frac{1}{2}$ thru 3 tons.

HEAVY DUTY (Type T) condensers have a highly favorable fouling factor and are designed for long service between cleanings. $\frac{1}{2}$ thru 25 tons.

SEA WATER DUTY (Type SW) are made with cupro-nickel water tubes and naval brass headers for resistance to impure water. $\frac{1}{2}$ thru 25 tons.

HM
Halstead & Mitchell



Ask for H & M products at your distributor's. Write for descriptive literature. Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

WATER-COOLED CONDENSERS • COOLING TOWERS • AIR COOLED CONDENSERS • FINNED COILS

Air Conditioning Anticipation Controls

'Crutch' Unit Term Very Important In Thermostat; Emphasizes Difference Between Cooling, Heating Controls

SAN FRANCISCO—Some of the differences between air conditioning and heating controls and the role of "anticipation" in cooling were outlined at a convention of the National Warm Air Heating & Air Conditioning Association by Harold A. McIntosh, chief engineer of the controls systems division of General Controls Corp.

Major different aspect between heating and cooling controls is that loads that are normally deductive in heating are additive in cooling, he said.

"Everything you have in the way of appliances operating within that space tends to add to the heat load," he declared. "So your peak occurs in an entirely different manner than it does in warm air heating."

Problem In Proper Sizing of Equipment

"That is the reason why there is a great deal of discussion, a great deal of problem, connected with the proper sizing of cooling equipment," he indicated.

"The anticipator in a thermostat is a very important thing," he asserted. "In fact it is an almost necessary corollary to the basic thermostat function."

"Admittedly, we in the industry recognize the anticipator as a sort of a crutch. But it is a very useful crutch. And if you will use it, judiciously, you may find, as many people have, that installations which are not entirely adequate, may be vastly improved by judicious use of 'anticipation.'

"Modern thermostats for controlling air conditioning and cooling incorporate anticipation for cooling. This is of a different magnitude than in heating. We feel it is equally important in order to gain proper control of temperature."

"The caution that has been stressed in proper sizing of the equipment is that you be more careful not to oversize in cooling. There are several good reasons for this precaution," McIntosh indicated.

"One is that the results are much more noticeable if you

oversize the equipment. Cold drafts are more readily detected than an excess of warm air.

Anticipation Less of A Problem In Cooling'

"Secondly, the cost of the equipment is substantially greater, therefore it vastly affects quoted price. It is desirable, from a control standpoint, that the equipment not be oversized.

For this reason, the anticipation is not as much of a problem with cooling equipment as it is with heating.

"It takes a different form in the actual construction in the thermostat, and can be almost universally factory set in any thermostat that is used without having it field adjusted.

Prefabricate Wiring

"One thing the control industry has provided for in the field to help in some of the control functions is to prefabricate the wiring of all of the control factors, such as relays for fan operation, starters or contactors,

for the compressor, and any

other functions which are necessary. This is normally furnished as a part of the equipment you buy from the maker," he continued.

"Pressure controls are built in, and all of these functions are grouped together in an item which is generally referred to as the control panel. The panel industry has gone through considerable development in the last few years, and there is available to the manufacturer, as well as you in the field, the type of panel to do the type of job which you want," McIntosh advised.

"I think most of you who have been associated with this industry of warm air heating in the past are familiar with the advantages of 24-v. control systems in the lower cost of installation and greater sensitivity control."

"Now this is extended directly over into air conditioning. I

think you will find very limited amount of usage of any line voltage control. Generally speaking, we discourage it," he said. "You can do a better job at lower cost with greater flexibility through the use of the 24-v. system."

"There is a precaution to be observed when air conditioning controls are applied. The use of the self-generating or so-called millivolt types of heating controls should be handled through a relay action. This is very simply done. Then the advantages of the self-generating system, as well as the low-voltage 24-v. control circuit for the total operation, are retained nicely," McIntosh declared.

"If you try to directly combine the two, there are certain difficulties that can be gotten into. It is a very simple matter to procure a relay which is suitable to handle the very low

(Concluded on next page)

new No. 460 AIR METER

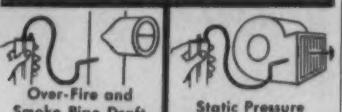
by

Dwyer

High and low ranges give direct velocity readings from 260 to 4000 fpm.

Static pressure readings from .005 to 1.0 inches of water.

Complete with every accessory... fits in shirt pocket.



WRITE FOR BULLETIN B-9
F.W.Dwyer MFG. CO.

P. O. Box 373AC
Michigan City, Indiana



Big lineup of new models!
Competitive prices!
American Blower
Branch-Office Assistance!

Residential Air Conditioning

(Concluded from preceding page) potential of the self-generating system.

"The anticipation effect you get with this is also aided, in that you have the control based on the resistance of the relay coil, which is the known quantity, and is then completely independent," he averred.

"I would like to stress briefly in connection with the selling of the controls, that there has been a regrettable tendency to use the cheapest thermostat on cooling jobs.

"This has grown out of the fact that a large part of this market has been developed on tract construction, where cost factors were extremely important," he said.

"In trying to introduce air conditioning into domestic application, there has been a tendency to save a nickel every place it could be saved.

"Experience has shown that

when a qualified person sells air conditioning to the homeowner, he can sell quality and performance by use of a specific air conditioning control.

"Don't let your servicemen or installation crews be frightened if they happen to come into extra wires involved in connection with controls," McIntosh cautioned. "They use two wires for a thermostat in the application of heating. There may be four or six wires in the air conditioning controls."

"But it is not complicated if they will only spend a short time becoming familiar with it. It is as simple to install and to service as are heating controls."

McIntosh was questioned from the floor about "How many compressor cycles per hour have you found practical with your compressor cycler?"

"That is a very good question," stated McIntosh. "The fair control," McIntosh explained.

evaluated their equipment on this, and they almost don't care how often you start it, as long as it is a reasonable application of their equipment.

"I don't believe you will run into any trouble normally if you go as high as six starts an hour. I would recommend not getting down to starting and stopping on a two-minute cycle or something like that. I don't think that advisable. But certainly we have found no difficulty with up to as high as six starts an hour.

'Cycle at Fair Frequency at Times'

"In some cases, as, for example, in spring or fall weather, where you don't have nearly the demand on the equipment, it may be advantageous to allow the unit to cycle at a fair frequency, in order to maintain absorption cooling. Representatives from Arkla Air Condition-

ing Corp., Rheem Mfg. Co., and Carrier Corp. will discuss air conditioning research conducted by their companies.

Two special clinics are scheduled on househeating and pilots, each with a manufacturer's and utility's representative participating. Delegates to the conference will also be given a background review of the recent Zinder Report which is said to provide a new yardstick for determining comparative costs of utility services. Pre-registration for this conclave may be made through AGA headquarters, 420 Lexington Ave., this city.

AGA also announces "significant new developments in gas appliances and utilization technology will be dramatically demonstrated before gas industry leaders at the 'Parade of Progress' exhibit sponsored by AGA during its annual convention in Atlantic City, N. J., Oct. 13-15."

Parade of Progress will be educational rather than promotional in nature, said H. Vinton Potter, vice president of Oklahoma Natural Gas Co., Tulsa, Okla., chairman of the Exhibit Planning committee.

Exhibits will be limited, he added, to gas utilization items still under development. Show will be on an invitational basis.

One section of the exhibit will be devoted to developments in residential gas summer air conditioning. Some displays will feature gas refrigerators.

Noon Sunday, Oct. 12 is the date set for opening the Parade of Progress in Convention Hall. The approximately 23,000-sq. ft. of display area will be open daily to 6 p.m. during the convention.

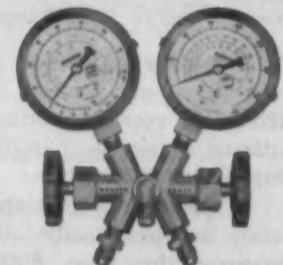
For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

For reprint copy, mail this ad with your name and address to Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.



NEW MADDEN CHARGING AND TESTING MANIFOLD

For testing and purging both high and low sides. Helps servicemen find trouble quickly. Features Teflon seal, and requires only light hand pressure for positive shut-off.

Plus our complete line of Wimco Tools: flare tools, tube benders, tube cutters, bending springs, etc.

SEE YOUR **MADDEN** WHOLESALER



MADDEN BRASS PRODUCES COMPANY
AURORA 6, ILLINOIS, U.S.A.

SHIPPING: AIR MAIL ADDRESS: 15 Grand St., New York, N.Y.



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AMERICAN BLOWER DIVISION

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They'll
Do It
Every
Time
by
Jimmy
Hatto



People Pout About Poor Service; Personally Prefer Performance to Price

(Concluded from Page 1)

as "package" air conditioners, refrigerators, freezers, etc.

One of the most conscientious manufacturers in our business is advising local franchised outlets:

"Let the Golden Rule be your guide. As you wish Service to be Done Unto You (and your auto, TV set, etc.) so You Should Service Well the Equipment You Sell."

This admirable statement possibly could be stated either more quickly, or more comprehensively. Attempts:

(1) Service like you'd like to be serviced.

(2) Don't hit and run. Maintain buyer satisfaction down through the years by keeping products you've sold operating satisfactorily.

(3) Take care of your customers as you wish suppliers would take care of you.

(4) Be unselfish about the petty annoyances and costs of good servicing. It will pay off in the long run.

(5) If you service satisfactorily, it will be easy to sell new-type products (or replacements of "standard" items) to customers you've kept happy.

Numerous observers of, and commentators upon, our current economic dilemma attribute recent hesitancy of American citizens in re the purchasing of consumer durable goods to:

POOR SERVICE they've experienced lately on practically all mechanical contrivances they own. Either the serviceman comes too late, or botches the job, or charges too much.

And that's bad for business, especially OUR BUSINESS.

After all, "discretionary purchasing power" IS discretionary. It is a personal attitude. In America you can pay your money and take your choice—of goods, services, investments, recreation, etc.

What you do with that "discretionary money" is your business. It's likely that you do business with people who please you.

Will you purchase a new automobile for yourself or a fur coat for mama, an air conditioner for the whole family or a vacation trip through the West?

These decisions vie with fixing up the guest room, sending Joanne to college, buy-

ing a boat, or putting money into a bank savings account. In the competition for "discretionary income" (amounts left over after stomachs are filled and the rent paid) consumer durable goods have been losing out recently. Let us repeat that there's a good reason why:

Automobiles, refrigerators, air conditioners, home heating systems, power lawnmowers, etc., etc., etc. are bought confidently. Too often they are repaired dismally, overexpensively, and usually too late.

Customers are becoming fed up with and even sick of this sort of thing.

Why try to elevate your family's living standards if the new Gadget goes rrrp, conks out, and a repairman can't be located who'll do a good job when you need him?

Discounted prices thence boomerang when the chips are down. In terms of satisfactory use of consumer durable goods, low first cost is forgotten when repair costs are exorbitant.

No wonder there's a strong loyalty on the part of consumers to dealers and contractors who can guarantee day-or-night SERVICE, at reasonable prices.

What good is any piece of so-called automatic equipment if it doesn't automate?

Some fortunate metropolitan dealers can rely upon centralized service facilities provided by manufacturers and their branches. Fringe dealers and contractors often can utilize service-specializing organizations in big-town areas which don't have manufacturer-sponsored facilities.

In contrast:

Reliable smaller-city dealers and contractors necessarily institute DO-IT-YOURSELF Service Programs.

If they don't, obviously they should instigate same. That is, if they expect to go on doing business (selling mechanical devices installed in homes) for a long period of time.

SERVICE is what dealers and contractors need to SELL today—rather than those "fire sale" or "bankruptcy sale" pricing policies they've been pursuing lamely in these late-lamentable years.

A low-price "bargain" is a bum deal if it doesn't function properly, or if it doesn't satisfy the owner at all times.

SERVICE is the key-word for SURVIVAL, in terms of selling "consumer durable goods" to American families.

AN INTERNATIONAL INSTITUTION • SUBSCRIBERS ALL OVER THE WORLD

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AIR CONDITIONING & REFRIGERATION NEWS

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Business News
Publishing Co.

F. M. COCKRELL, Founder

'The Conscience of the Industry'

Published Every Monday by BUSINESS NEWS PUBLISHING CO., 450 W. Fort St., Detroit 26, Mich. Telephone Woodward 2-0924. Subscription Rates: U. S. and Possessions and Canada: \$6.00 per year; 2 years, \$9.00; 3 years, \$12.00. All other countries: \$10 per year. Single copy price, 40 cents. Ten or more copies, 30 cents; 50 or more copies, 20 cents each. Send remittance with order.

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VOLUME 83, NO. 16, SERIAL NO. 1,517, APRIL 21, 1958



BEMOANS LONG-TERM SEALED UNIT WARRANTY

Twin City Supply Co.

Providence, R. I.

Editor:

The AIR CONDITIONING & REFRIGERATION NEWS has been received for many years to be read with pleasure and interest. As a result of this long-standing acquaintance I am addressing this letter to you in view of comparing opinions on topics with which I have had occasion to come in contact as a local wholesaler of refrigeration supplies and equipment.

The first of these concerns is the Five-Year Warranty on Sealed Units. When the sealed unit was introduced to the industry the manufacturers adopted the practice of offering a lucrative warranty in view of promoting acceptance. As of late this innovation has reached the point where it appears to be like the case of the "tail wagging the dog."

For example, a one-third HP sealed unit costs the dealer a little less than \$100.00. In selling this item a one year unconditional warranty and an additional four-year guarantee is included for a modest sum.

Under normal installation conditions this machine will operate sixteen out of twenty-four hours. Perchance a breakdown occurs. Labor charges are out of the question, being covered by the warranty, but the margin of profit on sale of the machine is so small that major breakdowns result in a disastrous loss for the installer. Should the difficulty prove too surmountable the machine is returned to the manufacturer through the distributor. Certainly the purchaser will not pay for such labor on an in-warranty machine. This is in exception to the freight charges and the paper work that is involved in such returns.

Certainly the factory reimbursement is totally inadequate for either the serviceman or the distributor to realize anything but a loss on the transaction.

On the other hand, this same purchaser will not balk at the service or repair of a \$2,500 automobile with a 90-day warranty. Once the warranty period is past the efficiency or inefficiency of the vehicle is an individual gamble. In relation to

(Concluded on next page)

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Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on commercial and residential air conditioning, heating, commercial and home refrigeration; manufacturing, contracting, distributing, retailing, and servicing. Read the Industry's newspaper for profit every week. Only \$6.00 per year, 52 issues (U.S. and Canada). Foreign: \$10.00 per year.

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OFF THE CHEST

(Concluded from preceding page) the investment the service policy on the two items is quite inadequate, particularly so when today's refrigeration serviceman is forced to do business in a highly competitive field.

Now that the sealed unit has proved its value to the industry it appears that the manufacturers would revamp their sales policy by initiating some in-line adjustments. Such a practice would prove acceptable to the wholesaler, the dealer, and even the customer. As it is, the prolonged agony is adding insult to injury in view of the present state of the industry.

Secondly, I would like to touch on a subject of increased local concern; the state of the refrigeration industry. With due regard for the seasonal nature of the refrigeration trade I cannot help but note the alarming dilemma that has overtaken the industry in New England. The passing of each week finds more men leaving the field than entering it. And why not, can't they

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Business Opportunities
Section
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advertising columns.

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ammunition
I've ever seen!



Westinghouse COMFORT COMMAND

a new way to sell air conditioning

YOU CAN BE SURE...IF IT'S Westinghouse

Air Conditioning Division, Westinghouse Electric Corporation, Staunton, Virginia

J-80568

refrigeration servicemen could be recognized as the tradesmen they are and equipment carried in sensible warranty the industry as a whole would benefit. As a wholesaler I believe such discrepancies could be overcome in a move that would add much-needed impetus to the industry. Most of all, the refrigeration trade would become an honorable profession, filled with many more gifted and qualified individuals than at present. The industry needs to keep pace with the changing times if it is to meet the obligations of the future.

H. J. DZIADOSZ

SEMANTIC ANTIC BLAMED FOR LETTER WRITER'S 'MISLEADING' CHARGE

Norge Div., Borg-Warner Corp.
Chicago 54, Ill.

Editor:

That old bugaboo, "Semantics," should plead guilty to the misleading information about the Norge Swing 'N Serve refrigerator called to your attention by a letter to the editor (March 17 issue) by Stuart Hollander. What should have been said was that the Norge Automatic Handi-Cube brought automatic ice cube dispensing to the electrical refrigerator industry for the first time.

As to automatic ice cube dispensing, here again we enter the area of semantics. Given water, the Automatic Handi-Cube delivers and stores ice cubes ready for immediate use. I maintain that we have a right to call it automatic ice cube dispensing.

A. J. TOBIN

IN THE MAY ISSUE OF
HOUSE BEAUTIFUL

FIRST PUBLIC SHOWING

... the greatest
air conditioning
story
ever told!

ON NEWSSTANDS
TODAY!
DON'T MISS IT!

WHAT . . . WHEN . . . WHERE

— A Guide to Coming Events of Interest

Air-Conditioning & Refrigeration Institute Annual Meeting
May 4-7, The Homestead, Hot Springs, Va.

National Restaurant Association Convention, Exposition
May 5-9, Navy Pier, Chicago.

Western Air Conditioning, Heating, Ventilating and
Refrigeration Exhibit
May 7-11, Shrine Exposition Hall, Los Angeles.

Industrial Heating Equipment Association Meeting
May 18-21, The Homestead, Hot Springs, Va.

Institute of Appliance Mfrs. Annual Convention, Exposition
June 1-4, Netherland-Hilton hotel, Cincinnati.

Edison Electric Institute Annual Convention
June 9-12, Boston.

Oil-Heat Institute of America Convention, Exposition
June 9-13, New York City.

American Society of Heating & Air-Conditioning Engineers
and American Society of Refrigerating Engineers JOINT
MEETING
June 23-25, Leamington hotel, Minneapolis.



KARLSONITE SCALE REMOVER

for
Air-Conditioning Equipment

- Removes All Scale Incrustations in cooling towers, evaporative condensers, water cooled condensers and ice cube makers.
- Removes Algae and Slime.
- Removes Silica Deposits
- Not Harmful to any Metals, particularly zinc coating or hot dip galvanizing.
- Safely and Easily Applied.

When you are putting air-conditioning systems back into shape for heavy summer service, you can remove all scale incrustations, algae, slime, and silica deposits from cooling towers, evaporative condensers etc. with KARLSONITE!

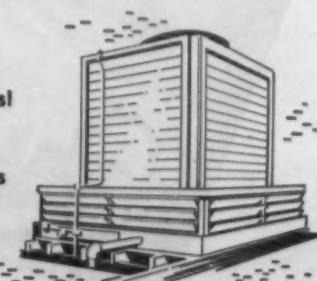
This is a solid—dry crystals—Just add to the sump basin and watch the scale disappear.

It is safe and easy to apply and completely harmless to any metals when used according to instructions.

KARLSONITE can save time and money in cleaning up air conditioning systems and making them ready for heavy summer duty.

Available in
25 lb. containers!

Write for
complete details
and prices.



STILES KARLSONITE CORPORATION
1552 GRAND AVENUE • WAUKEGAN, ILLINOIS

It's out today!

... on newsstands all over
ers are able and willing
first! Here's a giant of a

SUMMER FOR MILLIONS.



Even before publication, this ad was responsible for selling air conditioning ... Westinghouse central air conditioning. Countless Westinghouse Comfort Command Specialists have been using preprints of this sensational seven-page ad to lock up prospects ... hammer down sales!

over America . . . circulated to hundreds of thousands of homes whose owning and ready to buy central air conditioning. Another great Westinghouse of an ad that marks a first for the industry, too . . . packs a real wallop!

IS IT SOF PEOPLE

This bold, daring ad is just part of the master plan for selling Westinghouse central air conditioning during 1958. It's another reason why the switch is to Westinghouse...why the best distributors in the country are actively seeking a Westinghouse franchise! Interested?

J-80562

YOU CAN BE SURE...IF IT'S Westinghouse

Air Conditioning Division
Westinghouse Electric Corporation
Staunton, Virginia

FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE

Write Directly to the Company—at the Address Given in the News Item

Designs High-Current Capacity Switches

A new line of high current capacity series 810 momentary contact switches rating 10 amps. 125 v. and 5 amps. 250 v. a.c. is being announced by Alcor Mfg. Co., Dept. AC&RN, 4444 W. Roosevelt Rd., Chicago 24.

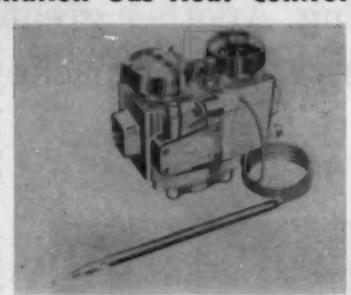
Although no larger in size than ordinary lighter capacity switches, the new series is applicable for use as safety switches, door switches, limit switches, and similar applications where higher current capacity is required, the company said.

These new switches are designed so their normally inert position is "on."

Adds Convertible Combination Gas Heat Control

"Unitrol 1000," a combination control for gas heating equipment which can be converted from manual to hydraulic bulb thermostat operation or electrically-operated room thermostat, has been introduced by Grayson Controls Div., Robertshaw-Fulton Controls Co., Dept. AC&RN, Long Beach, Calif.

Basic control provides for manual operation of space heating and central heating equipment. It is designed so that either hydraulic bulb or room thermostat units may be added at the option of the appliance manufacturer. The modifi-



cation can be made in the plant or in the field, without special tools.

Develops Small Induction Motor with End-Shield Modifications

Applications requiring small, lightweight motors can utilize a new sleeve bearing, 10-frame, small induction motor because of end-shield modifications according to the manufacturer, Specialty Motor

Dept., General Electric Co., Dept. AC&RN, Ft. Wayne, Ind.

First motor of its size to be made available with this endshield protection, the company claims, the 10-frame motor meets the re-

quirements of oil burners, domestic appliances, and special pumps.

The change will be an addition of a boss which may be knocked out for the purpose of mounting a thermal protection device.

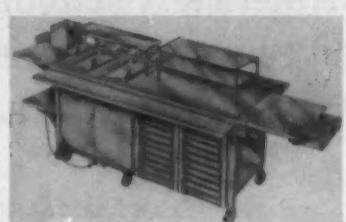
Air Conditioning & Refrigeration News, April 21, 1958

Introduces Three Units In Food Service Line

Availability of a new food service unit called "Add-A-Teria" has been announced by Lincoln Mfg. Co., Inc., Dept. AC&RN, P. O. Box 2313, Ft. Wayne, Ind.

It consists of modular-type stainless steel storage units that are used for transporting the food and also fit together in a "building block" system to form the actual serving unit. The company claims 50 to 5,000 people can be served with ease.

The producer also has developed a portable food service unit called the "Speed-A-Teria." This portable cafeteria is described as the fastest food service counter available and is claimed to feed up



to 250 people quickly and easily.

Along with that, Lincoln has available a new-type mobile cafeteria called "Port-A-Teria," designed to serve foods in areas where mobility of equipment permits multi-purpose use of service area.

Supplied in 6-ft. modular sections, the basic Port-A-Teria section is designed to receive accessories that convert it into a complete cafeteria counter capable of dispensing a variety of hot and cold foods, etc., the company said.



Beverage Dispenser Has Three Faucets

"Sodamaster Royal" is the newest model of the beverage dispenser line manufactured by Carbonic Dispenser, Inc., Dept. AC&RN, Canfield, Ohio.

Equipped with three "Moniflo" faucets with syrup adjustment screws and three 5-gal. stainless steel syrup tanks, the Royal offers a choice of flavor combinations of high carbonated, low carbonated, and still drinks.

Compact, it occupies 5½ sq. ft. of floor space, and is capable of delivering 2,436 6-oz. cold drinks during an eight-hour period with a room temperature of 80° and an inlet water temperature of 70°.

Axial Ventilators Hug Roof Line

A new line of contoured, roof-hugging axial roof ventilator air moving units for exhaust or supply

service has been announced by Trane Co., Dept. AC&RN, La Crosse, Wis.

Included are hooded and vertical, exhaust and supply, and direct and belt-driven units to handle a wide variety of ventilation purposes.

Hooded units, manufactured of steel, provide a minimum-height silhouette.

Offers Heavy-Duty 'Arco' Hole Saws

"Arco Hole-Saw," a new line of heavy-duty hole saws for plumbers, electricians, heating, and air

conditioning contractors has been announced by Arrow Metal Products Co., Dept. AC&RN, 421 W. 203rd St., New York City 34.

All models are equipped with a slug-ejector which pops out slugs and discs automatically.



You can count on
HIGHER PROFITS
WITH
Curtis
AIR CONDITIONERS

HERE'S WHY...

MAXIMUM DEPENDABILITY

Each CURTIS unit is backed by 104 years of engineering and manufacturing experience... one of many reasons why CURTIS air conditioning equipment operates at maximum efficiency with a minimum of maintenance.

CUSTOMER SATISFACTION

The long operational life and minimum service requirements of CURTIS air conditioning, combined with peak performance, assures satisfied customers.

PRE-SOLD PROSPECTS

National advertising beamed at virtually every prospect category helps pre-sell Curtis equipment for you. CURTIS provides sales and promotional aids to make your selling job easier.

PRICED FOR PROFITS

All Curtis air conditioning equipment is competitively priced, with a very generous profit margin for you!

REMEMBER—
you can count on

Curtis

OUR 104th YEAR
MANUFACTURING COMPANY • REFRIGERATION DIVISION
1912 Kienlen Ave., St. Louis 20, Mo.



Temperature Control Featured on Mark IV

New 1958 "Monitor" under-dash auto air conditioner has been added to the "Mark IV" line by John E. Mitchell Co., Dept. AC&RN, 3800 Commerce St., Dallas.

Unit has six louvered rotatable outlets claimed to concentrate cool air on one seat or spread it evenly through 360° in the car.

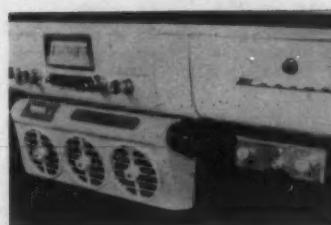
"Selectrol" offers temperature control by turning a knob on front of the case to vary discharge air temperature up to 30°. New con-

On this and the following page are presented some of the 1958 innovations of auto air conditioner manufacturers. For further information on the units write directly to the producer at the address given in the story. Other details of current auto air conditioning units and their manufacture are presented on pages 30 through 35 of this issue.

trol is claimed to hold temperature precisely all the time without fluctuation.

Twin squirrel cage blowers are controlled by rheostat switch permitting any fan setting desired. Claimed "exclusive" feature of completely redesigned unit is the "Beacon"—an illuminated signal on case front that shows when the clutch is on and when model is cooling in proper range.

Mark IV also offers standard dash air conditioner and a trunk unit through its 350 distributors from coast to coast.



Climatic Introduces Year-Round System

Marketing a year-round under-dash auto air conditioner for 1958, compactly styled for easy installation in any model car, is Climatic Air Conditioning, Dept. AC&RN, 2915 Canton St., Dallas 26.

Pushbutton control is claimed to start flow of warm or cold air within five seconds, maintain proper comfort automatically.

Features include high-speed compressor, electric-magnetic clutch, high-velocity twin blower fans. Unit is 16 in. wide, 6½ in. high, 10 in. deep.

'Vornado' Units Feature 2 Types of Condenser Coils

Development of two types of condenser coils different in shape and size to eliminate on-the-job modification of 1958 "Vornado" auto air conditioners has been announced by O. A. Sutton Corp., Inc., Dept. AC&RN, 1812 W. Second St., Wichita 1, Kan.

Compressor is located close to the engine block, belt lengths shortened, and pulleys redesigned on the new unit. Packaged in two cartons, the new air conditioner's basic unit consists of coils and compressor in one package with adaptor kit containing slotted-hole mounting brackets, pulleys, belts, etc., for specified automobiles.

One condenser of 1958 Vornado cares for all cars except Chrysler Corp. products. Same capacity is claimed engineered in a different-sized unit for them. Coils have been made larger.

Chrysler condenser coil measures 16¾ in. high, 23⅓ in. wide, 1¾ in. thick; other cars' coil is 13⅔ in. high, 23⅓ in. wide, 1¾ in. thick. Both coils use ¼-in. tubing, have 10 fins an in., and utilize a parallel circuit.



Evaporator of the 1958 auto air conditioner is crescent-shaped, has five air circulators, is claimed to offer greater cooling capacity. Each of the three air vents on unit's front are adjustable up or down and 360° around. One adjustable vent on each side of case distributes air over floorboards.

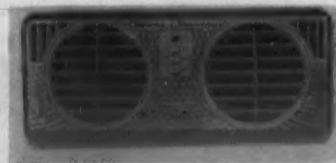
"Pressure chamber" behind coil of redesigned unit is claimed to deliver large volume of air which can be controlled by three-speed blower adjustment. "Power Mite" compressor is lighter.



Harrison Conditioner Designed for 3 Cars

Under-dash auto air conditioner, called "Cool-Pack," designed for dealer installation in new Chevrolet, Pontiac, or Buick cars and most Chevrolet trucks has been announced by Harrison Radiator Div., General Motors Corp., Dept. AC&RN, Lockport, N. Y.

Cool-Pack evaporator case mounts under the instrument panel, features four revolvable outlets permitting distribution of conditioned air throughout the car interior. Claimed to completely clean, cool, and dehumidify all air every 30 seconds, the system has full-range temperature control to permit individual adjustment.



Clardy Produces 3 Types of Car Coolers

Produced in three basic units supplying over 400 c.f.m. of air are new auto air conditioners made by Clardy Automobile Air Conditioning Co., Dept. AC&RN, 1728 Layton St., Ft. Worth, Texas.

"Champion" and "Clipper" are under-dash models, "Adventurer" a trunk unit—all referred to as "Towne and Country" units.

Featuring pushbutton controls for selection of proper cooling, under-dash Clipper has charcoal cabinet with chrome front. It has automatic clutch for constant temperature, and two three-speed squirrel cage blowers, clutch light, two drains. Metal case is lined with Rubatex as vibration isolator.

While Clipper model has suggested retail price of \$325, companion Champion air conditioners will be \$315. An under-dash unit, it features automatic temperature

(Concluded on Page 36, Col. 1)

Are You Paying Premium Prices For Your Pipe Wrapping?



Now...cut costs, reduce inventories and profit more with the one standard insulation that fits every pipe and fitting, meets every service requirement!

THREE INSULATING BARRIERS in

NO Drip TAPE

1. OUTSIDE Rough surface prevents free circulation of moisture-filled air—creates dead air barrier.
2. ¼-INCH THICKNESS Built-in moisture barrier assures utmost insulating efficiency.
3. INSIDE Dead air is trapped between "corrugated strands", forms added insulation barrier.

NoDrip Tape means more profit, less work on every job... saves you time, labor, material. NoDrip Tape eliminates most multiple wrappings needed with thinner wraps... inferior wraps.

Why pay more when you can buy the handy 16 foot roll of ¼" thick NoDrip Tape at less than half the cost of a roll of ordinary ¼" wrapping... and far below the cost of pre-formed foam cellular insulations?

Next time an equipment cold line job

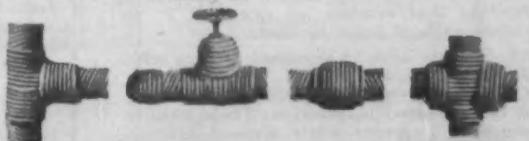
Easier to Apply...
EVEN AROUND JOINTS, TEES,
VALVES OR ANGLES



For large pipes, tanks, air ducts, we recommend NoDrip Plastic Coating for permanent protection from condensation, rust and corrosion. Another fine Mortell refrigeration product, NoDrip can easily be applied by brush or trowel to metal, concrete, brick, plaster, tile or composition surfaces.

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O.K! Send me full information about the complete line of Mortell refrigeration products.

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FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE

Write Directly to the Company—at the Address Given in the News Item

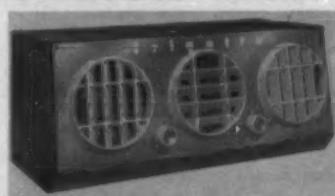
(Concluded from Page 25, Col. 1)
control, clutch light, fan blower, two drains, and baked-enamel finish metal case.

Adventurer is trunk unit with clutch, automatic temperature control, clutch light on switch panel, two separate motors with squirrel cage blowers, air filter, two drains, baked-enamel finish metal case, suggested list price, \$385.

Improve Components Of 'Frigette 580's'

"Frigette 580" for 1958, claimed to have every component improved, is currently being produced by Frigiquip Corp., Dept. AC&RN, 3724 N. May Ave., P.O. Box 7205, Oklahoma City.

Lines system eliminates unnecessary fittings and connections, it was noted, with fittings engineered so installer only has to screw hose connections onto



unit.

Compressor weight has been cut from 32 to 16 lbs., but capacity is claimed upped from 9.3 to 10 cu. in. displacement. Condenser has steel panels top and bottom and steel end-plates. Electro-magnetic clutch is said to give more positive turn on and off.

Evaporator case is all-steel with baked-enamel finish, has brass front plate with satin chrome finish. Temperature control is claimed to prevent icing, has manual control called "FrigiQUIK" dial for selecting temperatures. A rheostat fan switch permits selection of air volume.



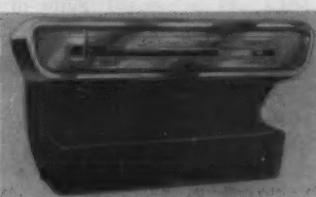
Firestone Markets Portable Model

Marketing an under-dash auto air conditioner made to its specifications is Firestone Tire & Rubber Co., Dept. AC&RN, 1200 Firestone Pkwy., Akron 17, Ohio.

Designed to fit most 1956-7-8 cars, the lightweight portable unit is claimed easily installed by factory-trained mechanics. Evaporator is positioned over the floorboard hump in center of the in-

Air Conditioning & Refrigeration News, April 21, 1958

Dodge Makes Station Wagon Center-Roof Units



er and heat exchanger units. One is mounted on the firewall, the other is a center-roof package. These are claimed to provide the additional capacity needed to handle larger volume and greater number of passengers of a station wagon.

Three-way distribution of the conditioned air is claimed to provide uniform conditioning for all passengers. Individual blower and vent controls permit temperature adjustments to suit individual tastes. Blower is claimed to have quiet operation.

"Car-Temp" can be used on all four-door, nine-passenger station wagons as well as the four-door six-passenger models, it was noted.



Forston Has Trunk, Under-Dash Models

New "Push Button" under-dash auto air conditioner designed for small-space installation has been added to line of Forston Co., Dept. AC&RN, 1400 Conti St., Houston 2, Texas.

Model PBD-3 features push-button controls, three-speed fan, automatic thermostat, magnetic clutch, quiet operation, and neutral-finish chrome-embossed front all-metal cabinet. Adjustable round plastic louvers direct air flow with additional outlets at each end of the well-insulated cabinet for claimed high-capacity cooling.

"Thinline" trunk model A38MC is a compact unit which has twin-blowers for cold air distribution from rear deck, fingertip controls on dash, and claimed quiet operation.

All Forston units, including other dash and trunk models, are adaptable for installation in most cars, station wagons, and pickup trucks.



Can Install Kool Cooler Yourself

"Install-it-yourself" under-dash auto air conditioner can be installed in the trunk if desired, according to manufacturer Kool Engineering Corp., Dept. AC&RN, 1320 N. Clybourn Ave., Chicago 18.

It fits most 1951 through '58 cars, station wagons, taxis, and trucks. Cooling cabinet can be connected to car's heater blower or bought with three-speed built-in blower. Compressor and other parts mount under the hood, total weight 85 lbs. Two adjustable grilles on the 6-in. high by 13-in. long case direct cool air all around the car.

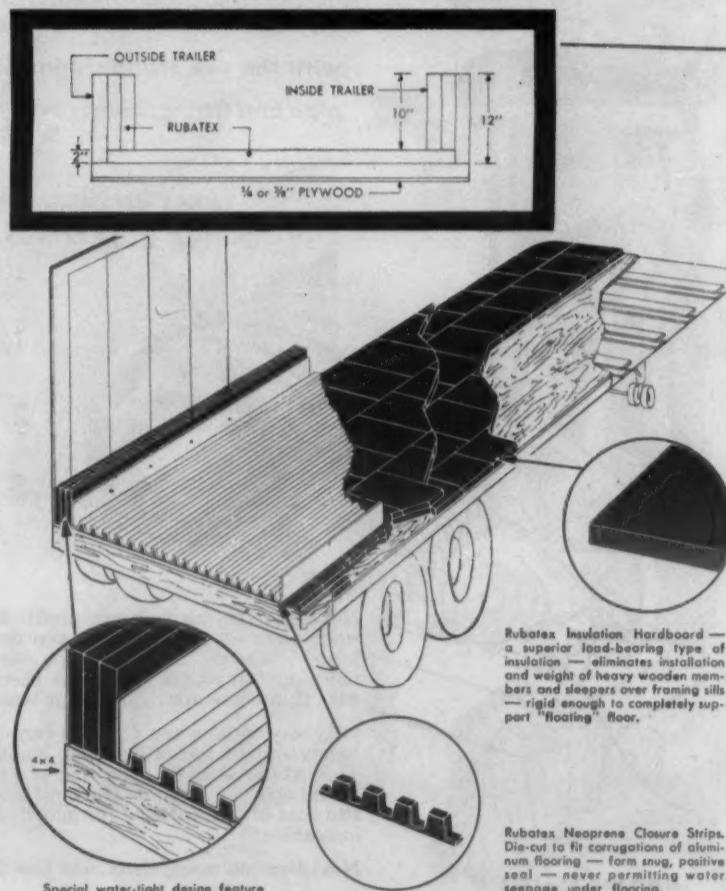
Rubber hose connections are used throughout on air conditioner which can be purchased either factory-charged with refrigerant or all parts furnished.

High heat from engine and exhaust calls for Rubatex Flooring to improve cargo-freezer efficiency

Design Guide for Freezer Trucks, Trailers and Vans

PROPOSED STEP BY STEP DESIGN OPERATIONS

- Lay plywood (1/4" or 3/8" thickness—exterior grade) on bolsters of truck body. As an alternate metal or masonite, 1/8" or 1/4" can be used.
- Coat underside and edges of plywood with emulsion or water dispersed type of adhesive. Avoid use of adhesive mixed with solvent.
- Bolt or rivet plywood to bolsters.
- Coat top side of plywood with same adhesive (adhesive water-proofs plywood and is also a preservative).
- Cement edges only of first layer of 2" thick Rubatex Insulation Hardboard (heavy coat). Apply first layer of Rubatex over entire floor. Tight joints necessary. Recommended size—2" x 27" x 54", R-103-S, 4.5 lbs. density.
- Use 2" thick x 12" wide pieces of Rubatex. Cover with adhesive on all sides and place on edge next to outside wall. (Make tight fit.)
- Cement edges of second layer 2" thick Rubatex for floor. Place directly on top of first layer. Stagger all joints.
- Use 2" thick x 10" wide pieces of Rubatex covered with adhesive on all sides. Place two layers of this thickness on edge next to first thickness that has been applied next to outside wall. (Make tight fit.) Stagger all joints.
- Place extruded aluminum flooring of type manufactured especially for refrigerated trucks directly on top of Rubatex Insulation. Bolt floor down at back end in joints of aluminum flooring to bolster by using 1/4" roundhead carriage bolts. (May be necessary to bolt floor at side door in same manner.) Bolt section of aluminum flooring that extends up side wall 7" to inside walls of truck or trailer.
- Seal the ends of extruded flooring with Rubatex Stock R-217-H closure strips. Closure strips should be applied as flooring is being placed in position. These closure strips will prevent water seepage beneath aluminum floors.



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Specially Designed Components Used In Artic-Kar Units for Foreign Cars

DALLAS—By using specially designed components, "Artic-Kar" air conditioners for 27 different foreign makes of cars, including the Volkswagen, are being successfully produced by Capitol Refrigeration & Mfg. Co. here, according to William E. Anglin, president.

These units are in addition to the company's line for standard American cars. The latter will probably represent 75% to 80% of the firm's output in 1958, Anglin indicates.

Systems being produced for the Volkswagen illustrate some of the problems involved in foreign cars, for in addition to its rear engine location this car is characterized by limitations in both space and horsepower.

The Volkswagen conditioner mounts a York A206 aluminum compressor on a $\frac{1}{4}$ -in. steel plate mounting bracket attached to the car's air-cooled engine. A specially designed evaporator-blower case, which is similar in appearance to the company's standard under-dash model, is located in the luggage compartment directly behind the rear seat.

A two-stage condensing system is provided. First stage condenser is located under the right rear corner of the car where it is subject to air flow due to the car's motion. Here the superheat of compression is removed from the refrigerant gas (Refrigerant-12) and a considerable amount of latent heat transfer takes place. Final condensing occurs in the second condenser located immediately ahead of the engine between the firewall and the air shroud.

Control panel includes a manually adjustable thermostat to control cycling of the magnetic clutch driving the compressor and a three-speed blower control. The magnetic clutch and flywheel assembly includes an oversized capacity holding coil specially designed for the

Volkswagen application.

A major problem in the refrigerant cycle of units for such cars as the Volkswagen, explains Anglin, is designing to assure operation at unusually low head pressure. This holds the power requirement to a minimum, which is "not only desirable but mandatory on the Volkswagen," he emphasizes.

Although 1958 will be the first in which Capitol expects any sizeable production of units for foreign makes, it pioneered a unit for the Jaguar back in 1955, Anglin recalls.

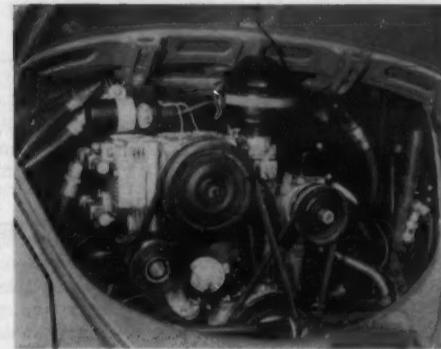
This one had the electric clutch and thermostat clutch "because we felt that the customer deserved the most trouble-free air conditioner available," he comments. "We



EVAPORATOR case of Artic-Kar unit designed for Volkswagen is mounted in luggage compartment behind rear seat.



NEW Artic-Kar "Iceberg" under-dash unit is designed primarily for the American car market, as are other models of under-dash, built-in front end, and trunk air conditioners.



SOME of the problems involved in air conditioning foreign cars can be observed in this view of compressor mounted on Volkswagen air-cooled engine. Note second stage condenser. First stage condenser is located under right rear of car.

have continued to equip all of our Artic-Kar foreign car units with the automatic clutch and thermostat even though space limitations on some of the cars make this a difficult problem."

Besides Volkswagen and Jaguar, this company produces units for Rolls-Royce, Mercedes-Benz, MG, Renault, Austin, Hillman, Morris, and other foreign makes.

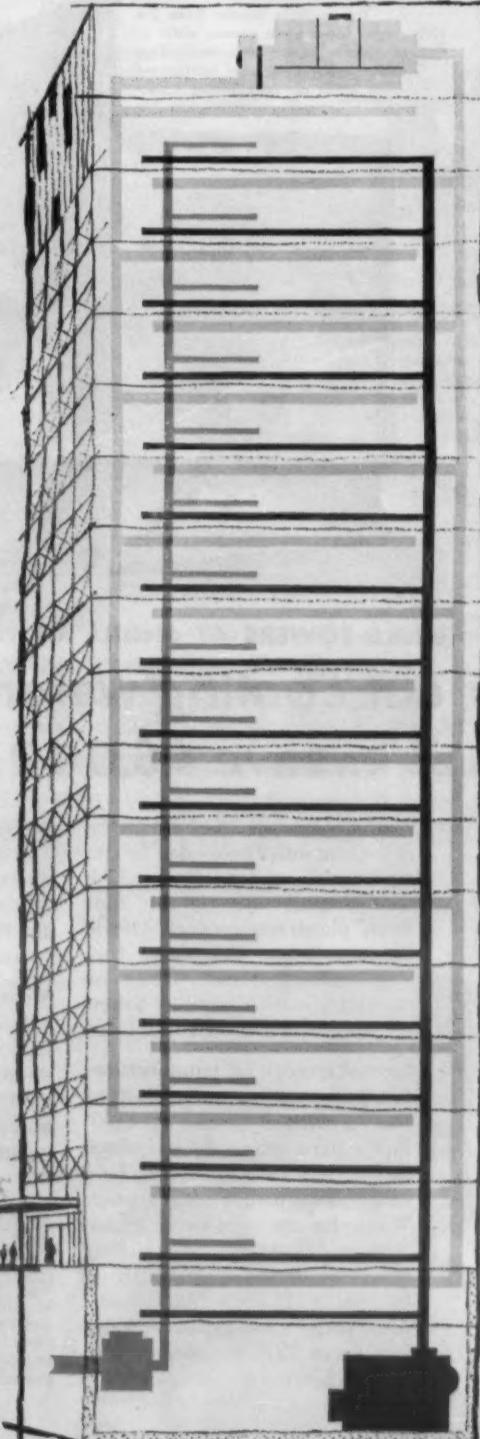
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Sees Trend to Factory Air Conditioning

Survey Shows Trend Strong In South, Fastest In Textile Industry; Estimate 20% of Floor Space Now Conditioned

LA CROSSE, Wis.—In a report on the outlook for air conditioning of factories for employee comfort, the Trane Co. said it finds that among its own sales there was a marked increase in 1957 of centrifugal refrigeration (a basic component for central air conditioning systems) for industrial use.

Centrifugal Refrigeration Tonnage Double 1956

The firm reports centrifugal refrigeration tonnage for industrials last year more than doubled 1956 figures.

Also, the company added, a number of big jobs were reported, most notable being the Martin Co. guided missile plant

in Orlando, Fla., which calls for 3,250 tons of Trane refrigeration, and the new factory at Skokie, Ill. for the Teletype Corp., Western Electric subsidiary, which is using 2,500 tons of refrigeration.

The company stated that today more of the large architectural and engineering firms are recommending that their factory clients install air conditioning now or provide for its addition later.

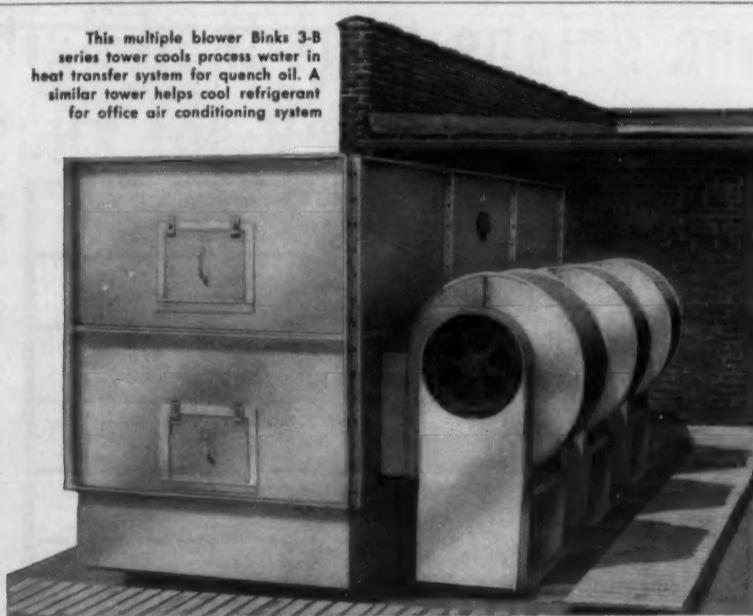
Trane Vice President A. C. Menke said, "We have been watching the industrial field closely for some time now and believe that a definite trend toward factory air conditioning is materializing."

"Despite the additional installations made during 1957, less than 1% of U.S. factory space is air conditioned. However, what has happened in the office field, where today all new first class buildings are air conditioned, could ultimately happen in the factory market. When it is remembered that there is 50 times greater plant space than office, the potential is excellent," the executive declared.

More Efficiency

Employees working in controlled temperature surroundings are more efficient and in many instances the quality of the product being manufactured

This multiple blower Binks 3-B series tower cools process water in heat transfer system for quench oil. A similar tower helps cool refrigerant for office air conditioning system



BINKS TOWERS AT MCGILL MANUFACTURING CO., INC.
CUT COOLING WATER USAGE 95%
...SAVE \$6,000 ANNUALLY

"We were using 2,840 cubic feet of cooling water every day for our manufacturing processes and air conditioning," reports Mr. Max Boté, plant engineer at McGill Manufacturing Company, Inc., Valparaiso, Indiana. "Since installing two Binks cooling towers we use less than 200 cubic feet."

Control quench oil temperature
Bearing parts manufactured by McGill are heat treated. At 1500° F., the parts are cooled in quench oil which is held at 110° F. by a water-cooled heat transfer system. Water for the system is cycled through a Binks 3-B series cooling tower where its temperature is lowered 8° F. under all climatic conditions. A similar tower helps cool Freon 22 in the office air conditioning system.

Whisper-quiet operation

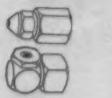
Tip speed of the squirrel cage blowers is one-third that of equal capacity propeller fan units. Their quietness permits installation next to windows or in building wells.

Minimum maintenance needed

All panels are heavily galvanized. Outside, they receive two coats of aluminum paint; inside, a durable zinc chromate coating. Blowers and motors are placed outside the moisture laden air stream. Decking is of heart redwood.

Send for complete data

Ask your Binks Branch Office, or write direct for a copy of Bulletin 477-A and 333. Binks engineers will be glad to answer your questions and help solve your particular cooling problems. There is no obligation.



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is improved, it was pointed out. "Furthermore," said Menke, "it has been demonstrated that office employees working in air conditioned spaces show increased efficiency, helping to justify the expenditures for air conditioning equipment. Ultimately, the factory employee will work in air conditioned areas and, in like manner, his increased output will help to justify the cost of installing air conditioning.

thereby reducing substantially the cooling load.

4) Ways in which cooling can be brought to a pin-point spot surrounding an individual worker. Only those portions of the plant in which employees are actually working are spot cooled. The rest of the plant is not, again resulting in a marked cost saving.

5) Designs which are keyed to air condition only the working zone—that 10 to 12 ft. of space directly above the floor. This occupied zone cooling takes advantage of the fact that cool air stays down, minimizing the cooling of overhead, unoccupied areas.

'Find Cooling Is Sound Investment'

"Also, as labor costs go up and the cost of air conditioning factory space goes down, the justification becomes even more favorable. Already many manufacturers have found that air conditioning is a sound investment in many types of plants."

Menke noted that improved methods are resulting in more economical air conditioning systems for industrial plants. He said several of the newest methods being used to help reduce installation costs include:

- 1) Recognizing the fact that it is not necessary to reduce temperatures in factories to the same degree as in offices. By designing for higher temperatures, but lower humidity, satisfactory conditions are obtained at lower costs.

- 2) Methods whereby air curtains are incorporated to separate non-conditioned spaces such as storage areas from the conditioned portion of the factory.

- 3) Ventilating setups which remove heat from machines and other equipment and exhaust it.

'Cooling Helps Reduce Turnover'

In addition to worker efficiency and product quality improvement, other factors cited which influence managements to install factory air conditioning include reduced absenteeism, lowered turnover, ability to attract and hold skilled personnel, and improved morale.

"The fact is," said Menke, "in many instances a combination of these factors pays for the cost of the air conditioning equipment over a relatively short period of time."

Trane undertook a national survey, with the help of its field sales force, in which leading architects and engineers were interviewed to get their present opinions and future predictions about factory comfort air conditioning in their particular area.

Architects and consulting engineers were queried in Atlanta, Baltimore, Los Angeles, St.

(Concluded on next page)

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HASTINGS AIR CONTROL, INC.

3215 Leavenworth
Omaha 5, Nebraska

Factory Cooling Trend Spreading--

(Concluded from preceding page)

Louis, Washington, Philadelphia, Memphis, Dallas, Houston, Cleveland, Boston, New York, Milwaukee, Chicago, Pittsburgh, Detroit, New Orleans, San Francisco, and Greensboro, N. C.

Survey Findings

Here are the findings of the survey:

1) A definite trend is developing toward air conditioning of U.S. industrial plants for employee comfort as distinguished from air conditioning purely for climatic control for industrial processes.

2) The trend is particularly strong in the south where an investment in air conditioning offers returns on more days of the year. Some consulting engineers estimate that as many as 75% of first class new factories—and 50% of all Grade A factories—will be air conditioned for employee comfort within the next 10 to 15 years.

3) However, the trend is not confined to the south. Rather, industrial air conditioning is making inroads in the northeastern and midwestern parts of the country, particularly in the electronics, precision tool, and other skilled labor industries.

"In these industries," said Menke, "high wages are paid to attract and hold the talented personnel needed to do the job. As a consequence, management normally do everything possible to achieve the greatest productivity return."

4) Factors in the trend include competition in industry for skilled help, the desire to maintain employee efficiency in all types of weather and employee demands.

One of the industries in which the trend is at its fastest is the textile industry.

Consultants in this field estimate that 20% of floor space is air conditioned with refrigeration today as against about 1% 10 years ago. This is exclusive of spaces using evaporative cooling and total floor space includes such areas as warehouses as well as production space.

Textile, Tobacco Mfg. Plants Seen To Be Fully Conditioned Soon

The Trane office at Greensboro reports that almost complete air conditioning of textile and tobacco manufacturing areas will be finished by major manufacturers within the next decade. Very little new construction in either industry will

go up by 1965 which is not fully air conditioned.

In the past few years, limited studies have been conducted which tend to show that air conditioning increases efficiency and productivity and improves the health of workers, Trane said, adding:

"For instance, a survey among 75 manufacturing plants in the New York City area indicated that 100 days each year are so hot and humid that employees either slow down or stop work entirely during part or all of the day, and that an average of \$108 in wages is lost each year for each employee not working in an air conditioned plant.

'Cooling Halts Absenteeism'

Plant absenteeism dropped 25 to 30% after installation of air conditioning, turnover in personnel was reduced, cleaning costs were lower, and production increased."

Trane also pointed out that the actual owning and operating cost of air conditioning turns out, generally, to be relatively low when reduced to the cost per piece produced, or the cost per hour, or the cost per person.

'Most Hosiery Plants Cooled'

"For example," the report said, "most hosiery plants are air conditioned and have been for years, with a very substantial number being done after World War II. Actual figures in this industry show that the owning and operating costs of a hosiery plant air conditioning system, when related to one pair of the finished product, amount to one-third of 1% per pair, or three mills per pair. This assumes production on a two-shift basis and a reasonable amount of down time.

"Also, an analysis of at least one job showed—due to less maintenance on machines, less down time, etc.—savings per year up to 80% of the total investment required to install air conditioning in the first place," it was added.

Industrial Air Conditioning

Baghdad Brewery Chills Beer by Refrigeration

SYRACUSE, N. Y.—Modern brewery methods have reached Iraq, where an up-to-date refrigeration system has been installed in the Eastern Brewery near Baghdad, it was reported by Carrier Corp. here.

The new brewing plant, located on the bank of the Tigris River 10 miles south of Baghdad, is one of the few in the Middle East.

Refrigeration in Eastern Brewery is being provided by Carrier, which is supplying five reciprocating compressors, with one stand-by unit. The equipment will have 100 tons of cooling capacity.

Six cold storage rooms will be kept at a constant tempera-

ture of 32° and the fermentation cellar at 39°. A 41° temperature is maintained for wort cooling.

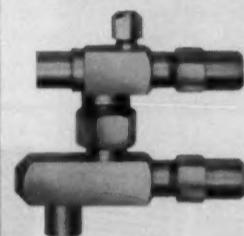
The installation is being engineered by the firm of Hafidh Al Kadi, Carrier distributor for Iraq.

Wickford Forms Div.

NEW YORK CITY—Wickford Products, Inc. has announced the forming of an Industrial Div. to be headed up by Leonard Smith, formerly assistant to the president of Lightolier, and a sales industrial management consultant.

This division will handle sales of the company's air conditioning and furnace filters by the air conditioning and refrigeration, heating and plumbing, and electrical fields. Wickford will name representatives.

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Didn't Like '57 Auto Air Conditioner Design

Better Brackets, Direct Drive, More Radiation Would Cure Many Headaches, Installer Contends

By George M. Hanning

ST. LOUIS—The design of automobile air conditioners, both by the auto manufacturers and the independents, was appalling last year, declared an experienced refrigeration man here who has installed many brands for local dealers and serviced most.

The factory-installed jobs were worst of all, he added.

DOES EVERY SERVICE JOB IN SAME DAY

Roy Houlihan, head of Arrow Refrigeration Co. here, gained this sour opinion after a hectic summer of installing and servicing from 25 to 30 cars a day. Every car brought



OPERATING PUSHBUTTON CONTROLS on air conditioner in Borgward is Georgia Schneier of St. Louis. Houlihan prefers pushbutton to thermostatic controls on auto coolers. He tells why in this article.

in was turned out the same day, he boasted, even if we had to work til midnight.

Business was good last year, he admits. But the units got an awful booting around that may

well be reflected in reduced sales this year.

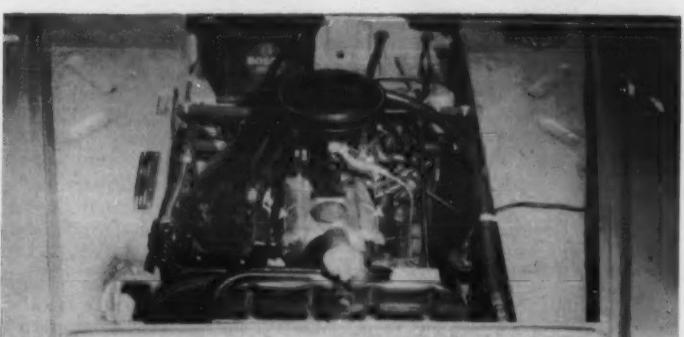
To illustrate what he means by poor design, he cited these examples.

"About half of our service calls come from the idler pulley," Houlihan said. "It may be out of line or any number of things might go wrong with it.

SUGGESTS DIRECT DRIVE FOR UNITS

"All it is used for is to hold the belt tight. I think the manufacturers ought to get rid of it entirely and work out some other way to tighten the belt. I believe they should go to direct drive."

One auto manufacturer, he



WHAT MAY BE first installation of auto air conditioning in a foreign car was put in this Borgward, a small, sleek job from Bremen, Germany. Note at left front how body frame had to be cut to get compressor motor pulley in place.



ROY HOULIHAN, head of Arrow Refrigeration in St. Louis, who made the installation, demonstrates that you can get a set of gauges on this unit. He charged that you can't on one American car cooling system.

said, put the holding bracket right over the suction valve so "misleading propaganda" about how easy it is that a serviceman couldn't hook a gauge to it to test the unit from one car to another while it was running.

"We know these units were never tested while running at the factory," he commented.

The hinge that holds the hood open on another car came right down through the flexible air hose of the air conditioner when the hood was lowered.

A third unit had no air passage over the condenser.

"We tested one here that was building up 300 lbs. head pressure with no overcharge of gas," he related. "We put in cardboard to divert air over the condenser and the head pressure came down to 185 lbs. in seconds."

The independents, he asserted, were trying to sell their units at a price and using inferior materials to keep the price down. Arrow was plagued with leaky hoses, defective valves, brackets breaking from vibration, and pulleys out of line.

REPLACEMENT PARTS BETTER

"We know it was just inferior materials, because the replacement parts they sent us were much better than the ones they originally installed," Houlihan declared.

He suggested that all auto manufacturers should do something about their radiation. He believes they can do so. None of them are getting enough air over the auto radiator when air conditioning is installed.

He also suggested that they do something about their bad brackets. Many service calls are caused by broken brackets that weren't able to stand the strain of road vibrations.

Every auto air conditioner should be equipped with a clutch, he added. Customers who don't have them are very unhappy about it.

Another vexing problem Houlihan believes manufacturers can do something about is

the cramped quarters, Houlihan declared, all serviceable parts are exposed so that the serviceman can reach them.

"This was a headache last year," he said, "and we are getting it already this year."

"When the customer finds out it is going to cost about \$100 to transfer his air conditioner, he blows his stack. He's been told that all we have to do is change four bolts and that's it."

"But it doesn't work that way. We have to buy new brackets and possibly some other new parts to make the unit fit his new car. In addition there is about \$50 worth of labor."

"The manufacturer shouldn't make it tough on his dealers by misinforming the customer."

Could he do better himself? Houlihan had a chance to try.

Last fall he made what he believes is the first installation of auto air conditioning in a small, foreign car in this country. In his four years of installing auto units and 15 years of working with truck refrigeration, he has heard of no other.

A customer brought in a new "Borgward"—one of those sleek, small cars made in Bremen, Germany. He wanted it outfitted with air conditioning.

No factory made air conditioner, of course, would fit the cramped space under the hood of the Borgward.

PUT IN EQUIPMENT WHERE WE COULD'

"We put in a 'Parkomat' low side and worked the rest of the equipment in wherever we could," he said.

He used a condensing coil with wider than normal fin spacing. This permits more air to flow through the coil so that the auto radiator gets enough.

The evaporator is located under the dash. The system is operated by pushbutton controls rather than thermostatic controls.

Despite the cramped quarters, Houlihan declared, all serviceable parts are exposed so that the serviceman can reach them.

Model COM Commercial Air Conditioner 3 & 5 ton—Water & Air Cooled

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LEFT: Thermometers were taped to antennas to get temperature readings. Sometimes temperature soared to 115°.

EVERY day test cars drove over mountain highways and desert roads to force driver fatigue and measure effects of air conditioning on test drivers.

Driving Tests Reveal Auto Conditioning Benefits to Driver's Health, Alertness

(Concluded from Page 1) on the Arizona desert. A practicing physician, who is a member of the Arizona Medical Association, supervised the tests and analyzed their results. The Arizona State Highway Dept. cooperated with the test group.

Two young men of identical weight, height, and build were used as "guinea pigs" in the experiment. Every day during the test period, an air conditioned car driven by one man, followed by a non-air conditioned car driven by the other, covered a 500-mile course through the desert, over mountains and dusty roads.

GIVEN PHYSICAL EACH MORNING

Each morning prior to the drive, the subjects were given a physical examination that included pulse, temperature, respiration, blood pressure, and weight. A record was also kept of any subjective symptoms such as "stomach cramps," "feel mean," and similar complaints as reported by the subject or observed by the attending physician.

Recognized tests to determine vision, field of vision, depth perception, reaction time, and color vision were also given each subject. The same examination was repeated at the end of each day after the 500-mile drive, to accurately determine the physical effects on each man.

In order to insure fair test conditions, each of the drivers was required to eat the same meals, consume equal amounts of water, and sleep in identical rooms each night. At no time during the test period was a subject permitted to exercise, relax, or eat without matching activity on the part of the other.

DROVE EVERY DAY FOR FIVE DAYS

For a five-day period, one of the men drove the air conditioned car every day, over the 500-mile course. He was followed by the other subject in a non-air conditioned car of identical model and make. At the end of the five-day period, the drivers switched cars and continued the tests.

By having each driver spend five consecutive days driving the air conditioned car and five days driving the non-air conditioned car, it was possible to secure accurate evaluation of their physical gains or losses under identical conditions. The physician supervising the test and its results stated that "... both of these men were in the peak of physical condition, both fine when driving the non-air con-

ditioned car, complained of "fuzzy vision" at the day's end and although they could read the eye charts quite well, they reported that the letters seemed to dance and blur. One driver complained of "abdominal cramps" after his first three days of hot driving.

While driving the non-air conditioned car, one driver reported that the glare of the sun on the lead car's bumper and the bright color of the car itself, produced a sense of self-hypnosis. He actually felt as if he were being hypnotized or at least going to sleep. When the driver of the air conditioned car was following the non-air conditioned one, the report shows that no effect of self-hypnosis was experienced. Many single car highway accidents have been attributed to this hypnotic effect of driving.

Another interesting sidelight brought out by the test, was the observation of the driver of the non-air conditioned car who re-

ported that he "felt meaner" while driving the hot car. He also reported that he had an intense desire to speed and to take chances. The fact that he was driving under controlled test conditions at set speeds was the only thing that prevented him from doing so.

The supervising physician reported that there was "practically no change in either subject from a standpoint of pulse, temperature, respiration, and blood pressure." However, he explains, "This of course was to be expected since these individuals were young and in the peak of physical condition."

For some people, there would be an advantage in driving during hot summer days in a non-air conditioned car. The tests conclusively showed that the driver of the non-air conditioned car lost weight and the driver of the air conditioned car actually gained weight. Both men were on identical diets and consumed equal amounts of liquids during the tests. "This was probably related to the amount of perspiration," according to the physician.

When the gasoline consumption records of each car were tallied, it was discovered that the air conditioned car consumed less gas than did the non-air conditioned unit. The non-air conditioned car actually required an average of four gallons more each day to complete



ONE element in the daily tests was measuring subject's vision before and after the 500-mile drive. Subject is having peripheral vision measured.

the desert and mountain run for the 500-mile trip, although both cars were identical.

This added gas consumption on the part of the non-air conditioned unit is believed to be caused by the fact that all windows were rolled down creating additional drag on the car.

During the time the tests were being conducted, a film crew was kept at the site to photograph the actual test as it was being made. Vornado has made the film available for civic clubs and other interested groups through its dealers.

"We underwrote the cost of this important research project as a service to the driving public," says Hildreth.

"By conducting the tests on clinical procedures and through independent researchers, we have uncovered an important element to improve safety in today's high speed driving conditions," he concluded.

**SELL the NEW MODEL 580
frigette**

for
**FASTER,
BETTER
COOLING
..in CITY
DRIVING**

In 1958, sell FRIGETTE and you sell the FINEST under-dash auto air conditioner on the market! Your sales—and profits—will soar when word gets out about this great new Model 580 . . . the unit that gives powerful, high-speed cooling even in low-speed city driving!

Reasons for the new industry-wide superiority of FRIGETTE Model 580 include greater air delivery (350 cfm through three rotating louvers) . . . powerful new York (A-210) compressor, with 10-cubic-inch displacement . . . more cooling surface, with 2.4 rows of bigger coil and 72 square inches of fin face area!

With its FrigiQUIK dial control, FRIGETTE 580 permits fast, easy dialing of the exact degree of coolness preferred. Quieter than ever because of the rubber-shock mounted 4-blade fan, FRIGETTE for '58 will make a loud noise at the cash register all season long. Get ready NOW—mail the coupon TODAY for complete information!



as well as
on the
Highway!



FRIGIQUIP CORPORATION
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Oklahoma City, Oklahoma

Send me the full story on the new FRIGETTE 580!

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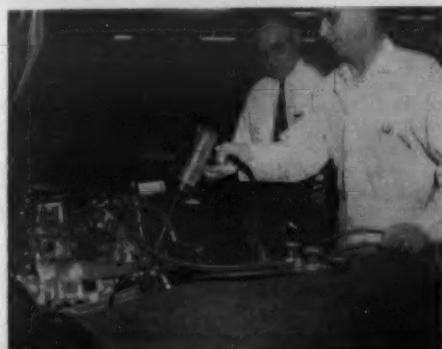
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CITY _____ ZONE _____ STATE _____

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Strong, qualified distributors and dealers wanted in some areas. Well advertised, thoroughly proved in action, FRIGETTE is the PROFIT line!

Integrated, Specialized Assembly-Line Tests, Charges Auto Cooling Systems



WITH SYSTEM CHARGED with mixture of Refrigerant-12 and nitrogen at 200 lbs. pressure and dried to the equivalent of -45° F., one of the first steps on the Chrysler automobile air conditioning testing and charging line is a test for leaks. Fred Weidman (in shirt-sleeves) supervisor on the line, checks as a workman uses a General Electric electronic leak detector.



ANOTHER STEP in the assembly line operations is the installation of the Ansul "Dry-Eye" combination sight glass and moisture indicator, which is standard on 1958 Chrysler and DeSoto models. A workman uses a power operated tool to tighten a connection for the "Dry-Eye" located in front of the condenser near the top.

DETROIT—Evidence of automobile air conditioning's "coming of age" and of the auto manufacturers' confidence in its future growth is to be seen in Chrysler Div.'s announcement that it has set up what it terms the industry's first integrated assembly-line for testing and charging auto air conditioning systems.

REPLACES 'UNIT TYPE' BOOTH PLAN

The integrated system replaces the "unit type" booth method of installation previously used, in which autos had to be pulled off the assembly line. The new method permits personnel specialization and use of the most modern equipment.

In the integrated assembly line, as the Chryslers, with air conditioning units installed, move slowly along the line into the air conditioning testing and charging section, a charging unit is attached which charges part of the system (evaporator, condenser, and refrigerant lines) with a Refrigerant-12 and nitrogen mixture under 200 lbs. pressure.

This charge, which is dried to the equivalent of -45° F. dry air by a Pittsburgh Lectrodryer system, serves to dry the vari-



OPERATING TEST is conducted when the air conditioned Chrysler models are pulled off the line following the charging operation. The unit is started up and a check is first made on operating pressures. Then (as shown here) the wet and dry-bulb temperatures of air entering the car through the fresh air inlet is checked. A thermometer is placed at the outlet for the conditioned air within the car, and the temperature must be within the range specified on a chart for the outside wet and dry-bulb temperatures. This is recorded on a card which becomes the system's "performance record" and is attached to the model tested.

REFRIGERANT CHARGE is metered into the unit by automatic charging equipment. The operating refrigerant charge is added after a vacuum pump has removed the refrigerant-and-nitrogen charge (used for drying and leak testing) and pulls a 28-in. vacuum



held for 2 minutes before charging begins.

ous parts of the system mentioned, and also keeps those parts under pressure for a leak test which is carried out with a General Electric electronic "sniffer" type leak detector.

A vacuum pump system then reclaims this refrigerant-nitrogen mixture charge, and pulls a vacuum on the system of 28 in. which is held for 2 minutes.

The Refrigerant-12 charge is then metered into the system with flexible charging lines connected to an Acme Precision Products metering system.

After being charged with refrigerant, the air-conditioned equipped autos are taken off the line for performance tests at adjacent stations.

TOO HIGH OR LOW SUCTION PRESSURE SHOWS TROUBLE

The engine is started up and is operated at around 1,200 r.p.m., which is the equivalent of about 25 m.p.h. road speed. The air conditioning system is put into operation, and under these conditions should check out at about 25 lbs. suction pressure, at 190 lbs. head pressure. If the head pressure will not get up to that figure, the operator covers the radiator front with a blanketing material until it does. A too high or too low suction pressure will indicate troubles in the system, such as blocked tubing.

Then an H-B Instrument Co. dry-bulb and wet-bulb thermometer set is placed at the outside air inlet at the base of the windshield, and recordings taken of these readings.

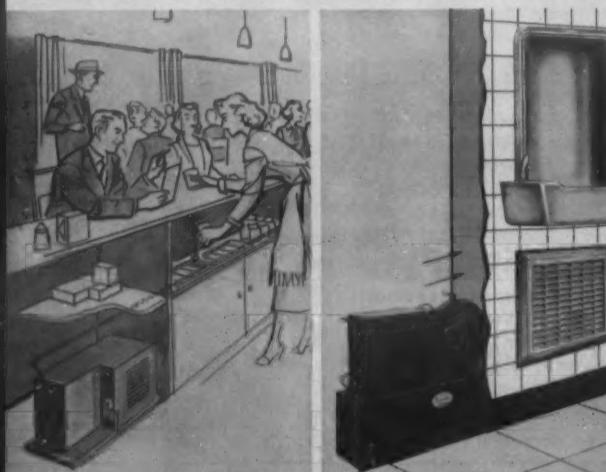
A Weston dry-bulb dial thermometer is then placed at the conditioned air inlet at the cowlings, and this temperature is recorded.

broader applications → bigger profits!

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Economical, practical, Temprite Remote Water Coolers save valuable floor space, protect cooler from damage by installing on overhead, out-of-the-way wall brackets. Connect to multiple bubblers, if desired, in hot-heavy work areas.



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MAY 7-11 1958

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SCHOOL HOUSE ENVIRONMENTAL CONTROL . . . CODES & STANDARDS . . . AIR CLEANING . . . AIR CONDITIONING, EXISTING BUILDINGS & RESIDENCES . . . HIGH TEMPERATURE HOT WATER . . . WATER CONSERVATION . . . RESIDENTIAL HEAT PUMPS . . . LOW TEMPERATURE DESIGN TECHNIQUES . . . LARGE ABSORPTION SYSTEMS

After 1958, this Exhibit will be presented biennially . . . SO . . . DON'T MISS THIS WINNER FOR 1958.

For additional information, write or phone: Fred J. Tabery, Exhibit Manager Western Air Conditioning Industries Association
3443 So. Hill Street, Los Angeles 7, California • Richmond 9-1091

Air Conditioning

Air Conditioning & Refrigeration News, April 21, 1958

Independent Auto Air Conditioner Mfr. Sees 'At Least' 25,000 Sales In '58; Firms Greatly Up Distribution

(Concluded from preceding page) on the part of distributors and dealers," says John Clardy, one of the owners of Clardy Automobile Air Conditioning Co.

"Sales are up so far this year. We expect a minimum of 25,000 and possibly 30,000 to 35,000 units in 1958," discloses B. M. Moody, Jr., vice president of Frigikar, whose sales were nearly 24,000 last year.

'Business Is Real Good'

"Business is real good. Haven't a thing to complain about. With the right kind of weather we all ought to make some money," suggests William Anglin, president of Capitol Refrigeration (Artic-Kar).

These increases in sales are all the more encouraging to the manufacturers in question because winter seems to have lingered longer than usual, especially in the southwest.

One manufacturer, however, suspects that improved sales in inventory continuing at a high level, these dealers will be re-

may be due largely to expanded distribution.

There is no question that these producers have greatly increased their distribution, particularly in the northern areas of the country. One, for example, now has an outlet up in Wausau, Wis. Another expects the California market with its rich potential to crack this year. Still another, Capitol, expects to boost sales in the foreign car market, which could account for 20% to 25% of the firm's unit sales this year.

But if production and sale of new automobiles continue to lag, how will these air conditioner manufacturers be affected?

See Auto Sales Lag Improving Position

The consensus is such a situation would improve their position. Their thinking runs like this:

With automobile dealers' in-

luctant to tie up any more capital in inventory than is absolutely necessary, so to cut down on this outlay manufacturers may very well ship more cars without air conditioning. This should increase the "after sale" market for the independents, or so they believe.

Also, slow sales of new cars obviously mean that many people are hanging onto their present cars another year or two. Instead of buying a new car some of these people will add an air conditioner, it is thought, or at least hoped.

'Must Be Sold'

In any event, the independents will not be waiting for customers to beat down the doors this year, for they recognize that car air conditioners have to be sold.

"People aren't taking it away from you now," says Brown of A.R.A., who adds, "we have 14 point-of-sale promotion items prepared for our distributors and dealers this year. Two years ago all we had was literature."

One independent, Mitchell, has scheduled some national advertising in the form of spot announcements on the NBC weekend "Monitor" broadcasts during May and June.

And all the independents expect to share the benefits of continued promotion of air conditioning by the automobile manufacturers.

'More Attention To Selling'

Increasing attention to selling is evident in the styling of today's units for increased eye appeal and even more compactness of the under-dash or "hang-on" units. Color, for example, is being emphasized by A.R.A. this year, which offers a wide variety of Mylar trim strips.

Effective and efficient cooling is being taken for granted.

Additional customer appeal also may be seen in lowered prices this year. Mitchell has a suggested list price (f.o.b. Dallas) of \$249 on its standard Mark IV dash unit; \$289 on its new "Monitor" dash unit; \$355

on its trunk unit. Installation charges, which are extra, average \$50.

A fair number of trunk units, by the way, are still being sold even though the under-dash unit dominates the field. ("We really got off the ground in 1955 with the under-dash unit," exclaims Moody of Frigikar.)

Dash Unit Sales Run 8 to 1 Higher

"Many customers who've had the deluxe trunk units in the past still prefer them," explained John Clardy, but he said the firm's sales last year ran 8 to 1 in favor of the dash unit.

Mitchell's records of Mark IV sales show that customer preference for the dash unit was 2.3 to 1 in 1956, 4 to 1 in 1957, and is running 6 to 1 thus far in 1958.

Although some independents naturally have something of an "I-told-you-so" attitude about the under-dash units of Chrysler's Airtemp Div. and now General Motors' Harrison Div., they look favorably on this trend by national manufacturers as one which will back up their own efforts in appealing to the public.

Incidentally, one of the strong talking points of the independents, which applied even more favorably to the under-dash unit than trunk models, is now quietly being dropped—the idea of transferring an air conditioner to the new car when a customer traded in his old one.

With rare exception, this isn't being done, thanks to the economics of the situation.

Most People Get New Unit

It costs, on the average, about \$100 to remove a unit from one car and install it in another. But at the height of the season—May and June—car dealers allow an average of \$150 extra on the trade-in for a car equipped with air conditioning. So instead of spending \$100 to shift a unit to their new car most people plunk down another \$50 or so and, with the trade-in allowance, get a brand new conditioner.

Just about the only people who do have their units transferred are salesmen who supply their own air conditioners for cars furnished by the employer.

While changes in styling are readily apparent in 1958 models, there seem to be no significant changes in the refrigerant cycle of most units, although there may be a trend towards use of squirrel cage blowers instead of propeller-type fans in the front end units.

New compressor designs, however, such as the York aluminum model and Tecumseh's horizontal unit, are on the scene this year and have gained considerable acceptance among the independents.

But the industry-wide trend to greater displacement of automotive compressors is questioned by some in the business.

"The limiting factor on cooling capacity is the condenser," points out the engineering head of one of the independents. "Increasing the compressor displacement without changing the condenser won't materially improve cooling capacity. Besides," this engineer says, "at speeds over 30 m.p.h. greater cooling

capacity than present systems have is not needed."

With their basic design problems pretty well licked and their distribution channels being rapidly broadened, the two major problems now facing independents, says one of them, are (1) getting enough adequately trained installers and servicemen, and (2) quality control.

"It's surprising the poor quality of components we have encountered from manufacturers with excellent national reputations," this independent complains.

Emphasizes Inspection

His answer to this problem is stepped-up quality control in his own plant with emphasis on rigorous inspection.

As for installation and service mechanics, he's conducting schools for distributors and dealers.

Remove Scale quickly and safely with

ANCO

CONDENSER CLEANER

You simply dissolve ANCO Condenser Cleaner in the sump while the system is in operation for effective results. Within 2 to 15 hours, depending on the thickness of the scale, the condenser tubes are cleaned. High head pressure caused by fouled tubes drops to normal and operating efficiency is restored. ANCO Condenser Cleaner can be safely used without damage to metals and is not hazardous to handle. Try it once and you'll use it always.



Keep cooling towers free of algae and slime with ANCO Algaecide.



Protect condenser against rust, scale and pitting with ANCO Water Treatment.

For all ANCO products see your wholesaler or write direct.

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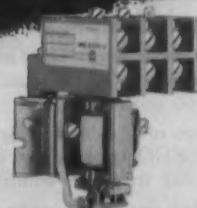
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Furnas contactors feature 20, 24, 30, 35, 40, and 50 ampere sizes to match starter requirements. Silver cadmium oxide contacts for longer life. Floating armature insures quiet operation.

A43

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Getting the Most Out of Auto Cooling

Loveley Suggests 5 Simple Procedures That Will Help Owner Get Maximum Comfort and, In Turn, Help Dealer Sell More Units

DETROIT—While there is no doubt that the modern air conditioned car can keep passengers cool and comfortable, there is much the customer, himself, can do to get the maximum benefit from his cooling unit.

In an interview with the NEWS, J. Loveley, assistant chief engineer in charge of air conditioning, heating, and ventilating, of the electrical section, Engineering Div., Chrysler Corp., stressed that many of complaints about automotive air conditioning arise because the customer has not taken the time to acquaint himself with the correct use of the equipment.

The manufacturer and his dealers can help the customer and increase future sales by taking time to instruct the customer and by encouraging him to read the manufacturer's carefully prepared operating instructions, he said. Loveley listed five simple procedures, all in the control of the user, which will increase the effectiveness

of automotive air conditioning systems.

1. Park in the shade or in a garage whenever possible.

"It is certainly much easier to cool a car from an ambient of 95° to 100° than from 125°, and these are the practical differences which can be obtained by selective parking," according to Loveley.

Twenty-five dollars will usually cover the cost of inside parking, not a high price to pay for a summer of maximum air conditioning, he pointed out.

2. Leave windows open slightly where possible, when parked.

When starting out, open the windows and run the blower full speed. Close the windows after a minute. A common mistake, Loveley said, is to leave the windows open for five or ten minutes.

"Actually, there are only 175 to 180 cu. ft. in a car, not even a good closet size, so the hot,

stale air can be driven out in a very short time."

3. Operate on high blower with no fresh air intake to achieve quick cool-down after starting.

The term cool-down refers to the actual lowering of the car's interior temperature. "We feel that cool-down should be accomplished with recirculated air, not with fresh air," Loveley explained. "Once the car is under way and temperatures are in the comfort range, then any amount of fresh air may be taken in."

"For this reason, our controls are so arranged that with only the change of a lever position, the driver can change from no fresh air during cool-down to all fresh air for driving. This system eliminates staleness in the air," he continued.

4. Use directional flow outlets to create a flow of air over the body surfaces.

Because of the large mass of the car walls and seats and the difference between standing ambient and desired temperatures, it is not practical for immediate comfort to be achieved in a few minutes by the process of cooling the entire interior of the car. Provisions must be made for directing high

velocity air at the passengers from the motor to the air conditioner condenser. This causes an increased head pressure and reduced cooling efficiency. The simple expedient of fast idling at about 1,200 r.p.m. will almost double the cooling effect under these conditions.

This high velocity air is distributed from outlets and grilles located on or near the front instrument panel. Once cool-down has been achieved, the continued flow of high velocity cold air over the face and neck of the passenger would result in discomfort, so the outlets must be designed for easy directional control.

During cool-down, air temperature from the air conditioner may be 65° to 80°. Once the car is down to equilibrium, the air temperature may drop to the 50's, Loveley explained, and air flow must be redirected.

5. Drive in low gear in slow traffic.

Actually shift into lower gears to get faster engine and compressor speeds when cooling is most needed.

"At speeds below 15 m.p.h., putting the car in low may give as much as 50% greater cooling capacity," he said. "Idling at 700 to 900 r.p.m. rather than the normal 450 to 500 r.p.m. will also accomplish this increase in capacity."

Loveley mentioned that a car which has been on a hard drive—a considerable stretch of highway driving—and which is forced to slow to a crawl or idle for any reason will cause a great deal of heat to be radiated

Speaking of maintenance of automotive air conditioners, he stressed the need for periodic inspection of the refrigerant charge using a sight glass. The condensers should be given the same care as the car radiator. Belting should be kept tight.

Loveley repeated his suggestion that users would derive greater benefit from automotive air conditioning if they read the manufacturer's carefully prepared operating instructions.

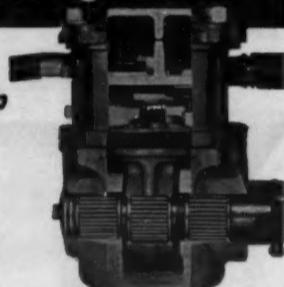
"You need to know your way around in operating air conditioning just as you would if you were to do your family wash in a new washer-dryer combination," he concluded.

ACE, the quality line for air conditioning and refrigeration

MODEL 77

Diaphragm Descaling Acid Pump

Descaling compounds can't affect this pump! All parts in contact with compounds are completely acid-resistant. Can be supplied as portable unit with pump and motor mounted on sturdy base and with convenient carrying handles.



Plus a complete line of centrifugal pumps

... sized to fit your needs. $\frac{1}{4}$ H.P. thru 10 H.P. Easy to install and compactly built. Advanced features include exclusive baked-on lifetime finish to enhance appearance and resist corrosion. John Crane mechanical seal, and all-bronze one-piece impellers. Continuous duty motor, 1750 rpm or 3450 rpm.

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You Asked About It

From the many requests for information it receives, the News will select and publish some of general interest. In many instances, the answers will be supplied by authorities in the industry.

Q. What is the maximum one manufacturer limits its re-paint drying (if an assembled car needs repainting) to 100°. This company has found that if the plug approaches 200° it begins to leak, even though it may not fail.

E.J.D.—Detroit
A. The information offered by engineers of the automobile firms varies slightly, although there is universal agreement that the limiting factor is the fusible plug on the receiver. Since all of the auto manufacturers purchase their receivers, this limiting factor is common to auto air conditioning.

If the fusible plug should blow, the entire refrigerant-oil charge will be lost, and there will be a possibility of fire. Even if the plug does not blow, the excessive pressures generated by the refrigerant at temperatures above 200° may deform the expansion valve.

The actual mechanical components of the air conditioning unit, such as bearings, soldered joints, and the like will take any abuse that the car motor will take, so this isn't a big problem. While the automotive manufacturers are aware of the potential danger in overheating the air conditioning system, the "quickie" car painters in private service garages probably give this point no thought at all in their drying operation.

While it is true that, to date, there have been extremely few reports of fusible plug rupture during paint drying, this will become a more general problem as the use of automotive air conditioning increases.

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Service & Supplies

Refrigeration Problems And Their Solution

(As Written by Paul Reed)

The late Paul Reed, one of the refrigeration industry's most respected writers and teachers, wrote a column on "Refrigeration Problems and Their Solution" which was published regularly in AIR CONDITIONING & REFRIGERATION NEWS for more than 15 years.

Readers throughout the years have hailed this written material as some of the most practical and helpful that has ever been published. Fortunately, the author had an opportunity to revise some of this material and the NEWS is currently re-publishing it.

What Are 'Gauge' and 'Circular Mils'

QUESTION: My electrician talks about different sizes of wire in "gauge" and in "circular mils." Will you please explain these terms to me?

ANSWER: You are no doubt referring to copper wire used for electrical work. The term "gauge" refers to a number that is given to comparatively small wires, up to about 1½ in. in diameter, and is known as the "B and S" gauge. Most wiring for electric lights is

done with No. 14 gauge wire, which consists of one solid copper wire .0641 in. in diameter. No. 12, which is used for wiring to ¼-hp. (115-volt) or 2-hp. (230-volt) motors is .0808 in. in diameter. The next size is No. 8 which is .1285 in. in diameter; and so on. The larger the wire, the smaller the number. Finally at size 0000, whose diameter corresponds to .528 in., it became cumbersome to use more zeros, so in the sizes mil wires.

above 0000 the wires are referred to in "circular mils."

A circular mil is the cross-sectional area of a wire that is one thousandth of an inch in diameter. The actual cross-sectional area is .0007854 sq. in., but the name "circular mil" is used for this cross-sectional area.

The next size above 0000 is 250,000 circular mils, which has a cross-section equal to a solid wire having a diameter of .575 in. The next size is 300,000 circular mils, which has a cross-sectional area equal to a solid wire of .630-in. diameter.

At about No. 8 size (1,285 in. in diameter) the wire begins to get too stiff to bend very easily and to pull through conduit, so from there up the wires are stranded. No. 6 is composed of seven small wires whose combined cross-sectional area is equal to what the solid wire would be if it had a diameter of .184 in. In the larger sizes, the number of strands increase; up to 0000 there are 19 strands and there are 37 strands in 250,000 and 300,000 circular mil wires.

Air Conditioning & Refrigeration News, April 21, 1958

SLANTS ON SERVICE

"Slants on Service" is a "package" devised by the NEWS to meet the needs of busy servicemen and contractors.

Leaking TX Valve Can

Result In Broken Reeds

A leaking or improperly adjusted thermostatic expansion valve on a self-contained air conditioner can break suction valve reeds on the compressor, points out Glenn Detrick, Copeland service manager.

Most air conditioners, of necessity, are designed to operate with a completely saturated evaporator. If the expansion valve opens too much, liquid refrigerant slugs can reach the compressor of a self-contained conditioner. On remote systems the suction line is almost always long enough to evaporate refrigerant completely before it reaches the compressor.

An overcharge of refrigerant in a self-contained conditioner can also cause liquid slugging and consequent damage to the valve reeds.

A leaking expansion valve which allows refrigerant to enter the evaporator and suction line during the off cycle can also lead to broken valve reeds, especially if the compressor is in a cool location. Refrigerant can condense in the compressor during the off cycle and can break the valve reeds when the compressor starts.

Don't Expose Units To Atmosphere

Service valves of compressors and motor-compressors should be kept closed at all times when the unit is not installed in a system.

If the valves are left open, air and moisture will enter the unit, resulting in rust or other damage.

The valves obviously should be kept closed on a new unit until it is installed, but the same rule should apply to units being returned to the factory for repair. Should the valves be left open between the time the compressor is removed from the system and it arrives at the factory, considerable damage may result, thus greatly increasing the cost of repairs.

Keep Covers on Terminal Boxes

Terminal box covers should be kept on the terminal box of motor-compressors except when they must be removed to gain access to the terminals.

Leaving the cover off will allow dirt and foreign matter to collect around the terminals and may permit shorts to occur.

Field To Talk on Industrial Service at May 8-10 Meeting

NEW YORK CITY—Crosby Field, president of Flakice Corp., will discuss industrial service during a symposium on "Economic Improvement for the Engineer in Industry and Government" at the New York State Society of Professional Engineers' 32nd annual convention in the Hotel Statler here May 8-10.

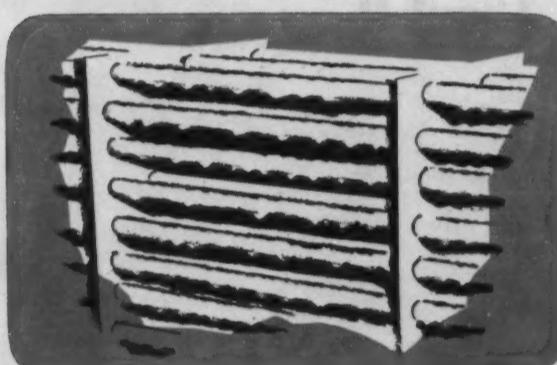
The society will also sponsor the 1958 Engineering Industries Exposition with its meeting.

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MECHANICAL INDUSTRIES PRODUCTION COMPANY

223 ASH STREET • AKRON, OHIO



Units choked with thick scale? You need "Virginia" Liquid Scale Remover. Goes to work instantly, cleans rapidly with dissolving capacity 50% greater than similar cleaners. Effectively inhibited to prevent damage to metals.



Light container is much easier to handle than heavy gallon jugs. Prevents breakage, splash and drip. Tough plastic liner and spout make pouring easy. To close, just fold spout, attach clip, and it's safely resealed, ready to store.



For reliable, efficient water treatment, use "Virginia" chemicals—Water Treatment Scale and Corrosion Inhibitor, Solid and Liquid Scale Removers, Algae-Cides #1 and #2, and Ice Machine Cleaner. Get them all from your nearest wholesaler.



A new moneymaker for service companies is the "Virginia" Water Treatment Plan. For details, get free folder, "How to Turn Water into Money." Write Refrigeration Division, VIRGINIA SMELTING CO., 189 Jefferson St., W. Norfolk, Va.



ARI Conference Schedule--

(Concluded from Page 1, Col. 4) Prior to that, Air-Conditioning Engineers' Standard Advisory committee will hold sessions Friday and Saturday, May 2-3 and the ARI board of directors will convene Sunday, May 4. There are 12 product section meetings slated.

Under this program, manufacturers will sign a license agreement with ARI. Units meeting the ARI standard will then be eligible for certification. All manufacturers whose units are licensed will be authorized to place some sort of label on the complying unit, stating it has been tested and rated in accordance with the standard.

To Be Ready Aug. 1

It is planned, ARI said, that the program will not be ready for initiation prior to Aug. 1 for next selling season.

Units offered as "certified" will be subject to spot tests. In addition, when complaints are received on ratings of individual units, special test checks will be made.

Producers will pay a specified amount, ARI continued, for the certification symbol placed on equipment to finance the program.

In addition to the ARI annual meeting session, proper, a meeting of the Air-Conditioning Div. will be held at 10 Monday morning, May 5 to which all members and visitors are invited. Annual meet-session is set for 9:30 a.m., Tuesday, May 6.

Special Speakers

They include Arthur Goldman, director of marketing and research for *House & Home*, who will describe efforts of that publication to have residential air conditioning considered an essential part of new home construction, just as plumbing and heating are now.

Norman Mason, Federal Housing Administrator, will cover his agency's recent rulings on this and on other FHA problems.

A spokesman for the air conditioning promotional program (project SMAC) will discuss progress-to-date.

J. R. Aldrich, building products sales manager of *Life* magazine, will go over results of that publication's study of consumer expenditures and motivation for these expenditures.

Section Meetings

Tentative schedule for section meetings:

Monday, 8 a.m., Flow Control

Valves Section (breakfast); 10 a.m., Tubular Products Section.

Tuesday, 2 p.m., Heat Transfer Section, Mobile Air-Conditioning and Refrigeration Section, Room Air-Conditioner Section, Small Compressor Section, and Temperature Controls Section.

Wednesday, 9:30 a.m., Air-Conditioning and Refrigeration Systems Section, Cooling Tower Section, Refrigerants, Lubricating Oils, and Chemicals Section, Unitary Air-Conditioner Section, and Valves, Driers, Fittings, and Accessories Section.

Aside from scheduled meetings, the annual ARI golf tournaments are to be held Monday with ladies teeing off

How Auto Cooling Production Was Divided In 1956-57

	INDEPENDENTS		AUTOMOBILE MANUFACTURERS	
	1956	1957	Chrysler Corp.	1956
Frigikar	12,000	22,100	Plymouth	1,000
Mitchell Co., J. E.	17,000	15,700	Dodge	1,500
Airtemp Div.	2,300*	15,380*	DeSoto	2,700
A.R.A. Mfg. Co.	13,500	15,100	Chrysler & Imperial	7,500
Sutton Corp., O. A.	none	11,000*		
Clardy Auto A.C. Co.	6,000	11,000		12,700
Park-O-Mat	6,000	7,850	General Motors Corp.	
Eaton Mfg. Co.	3,500	7,500	Chevrolet	17,000
Kauffman A.C. Co.	N.A.	6,200	Pontiac	15,000
Novi	10,000	6,000	Oldsmobile	35,000
Capital Refn	3,000	3,500	Buick	35,000
Automobile A.C. Co.	2,500	2,500	Cadillac	38,610
Tyler Service Parts Co.	2,000	2,000		46,476
Mobilaire Mfg. Co.				
Div. National Gas Co.	1,500	1,500	Ford Motor Corp.	140,610
Others:	10,000	15,000	Ford	25,000
Total	88,300	142,330	Lincoln-Mercury	11,000
				195,810
			Total	259,903
			Total Sales	285,110
				402,233

*Does not include units manufactured for automobile manufacturers.

Car Cooling Sales--

(Concluded from Page 1, Col. 4) units, were sold by the independent producers while 64.6%, or 259,903 units were installed by the automobile manufacturers and their dealers.

Independent manufacturers' units installed by automobile dealers are included in the totals of the independent manufacturers.

The southwest continues to be the leading area for the sales of auto air conditioners.

Based on the reports of manufacturers of nearly half of the units sold last year, here is the geographical breakdown of sales:

Region	% of Total Sales	No. of Units
Northeast	5.3	21,318
Midwest	15.9	63,955
Southeast	24.4	98,145
Southwest	44.0	176,983
West	10.4	41,832
Total	100.0	462,233

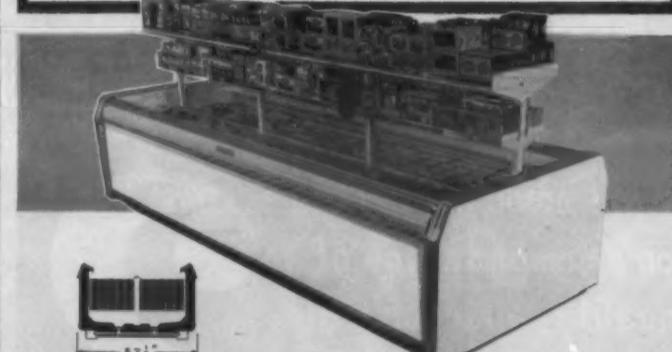
The front end type unit has become the standard, being utilized in 92.6% of all installations.

Prices of the units (not including installation) range from \$265 to \$450 with the great majority being priced around \$300 to \$350. The manufacturers questioned anticipate very little change in prices of the units. Those who do predict a change anticipate a price decrease of only 2 or 3%.

Above are News estimates of automobile air conditioner sales by manufacturers, based on direct report by some manufacturers and estimates by other industry sources.

Custom-Temp AIR CONDITIONING EQUIPMENT
SERIES I — WATER COOLED, SELF CONTAINED DE LUXE & UTILITY MODELS
5-15 H.P. IN STOCK
Performance Packed Packages
Manufactured by
CUSTOM-TEMP CORP., LIBERTY, NEW YORK
INQUIRIES FROM CONTRACTORS AND CONSULTING ENGINEERS INVITED

ONE REFRIGERATOR WITH THE VARIETY OF TWO!
PROBLEM: Greater variety and adequate capacity
SOLUTION: Warren's new Twin-Isle* Merchandiser...



Warren's TWIN-ISLE is a revolutionary new merchandiser for displaying ice cream and frozen foods: one refrigerator offering two-side shopping from two compartments, each with five frozen-food packs across; 57 1/2" wide over-all. Better merchandising, with twice the variety of a conventional low-temperature display case! What a liberal capacity, too! 2,316 frozen-food packs or 2,160 pints of ice cream. Most economical possible use of floor space and horsepower! No further need for expensive back-to-back case line-ups.

TWIN-ISLE Merchandisers feature Diamond Jubilee styling... COLORAMICS® Bands optional at no extra cost. Four-shelf merchandising canopies are offered for further utilization of floor space.

*Patent Pending

Warren Refrigerators

P.O. BOX 1436 • ATLANTA 1, GEORGIA
EXPORT DIVISION: P.O. BOX 2784, LOS ANGELES 27, CALIFORNIA



Correct Off-Standard Line Voltage with Acme Electric Buck & Boost Transformers

Check the supply line voltage, and if it does not match the normal voltage of the motor—install a buck and boost transformer to correct the over-voltage or under-voltage condition.

Remember these basic points: When motors operate on a line voltage in excess of nominal rating, operating temperature increases often to the danger point. When motors operate under low voltage conditions, necessary torque, to adequately handle the load, is lost. Motors labor to carry the load, overheat and burn-out.

These common conditions can be corrected with Acme Electric Buck and Boost transformers which permit modification of voltage by 5%, 6 1/2%, 10%, 13 1/2%, 20% or 26 1/2%.

Definitely the most inexpensive way to correct an off-standard voltage condition. Write for catalog and prices.

ACME ELECTRIC CORPORATION
924 WATER STREET • CUBA, NEW YORK

Acme **Electric**
TRANSFORMERS

Editor's Note: "Air Distribution Requirements In Year-Round Air Conditioning" by Frank D. Klein has been omitted from this issue due to space limitations. His discussion of Air Handling Fundamentals will resume in the next issue.

at 10 a.m. and men at 12:30 p.m. Men will be playing for the first time for the James Emmett trophy which will become an annual award to the winner of the men's tournament in memory of the late past-president of the institute.

Plan Other Contests With Golf Tourney

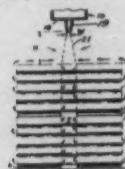
A number of other contests, with prizes for each, are planned to be held in connection with the golf tournament under chairmanship of E. W. Ervasti.

Cocktail parties are set for 6:30 both Monday and Tuesday evenings. The annual dinner will follow the Monday affair. Special functions, to be announced later, are being planned for the ladies.

PATENTS

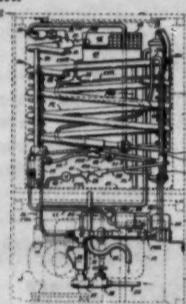
Week of Jan. 28

2,821,029. METHOD AND APPARATUS FOR CIRCULATING AIR. Edward Simons, San Francisco, Calif., assignor to Alford Refrigerated Warehouses, Dallas, Tex.



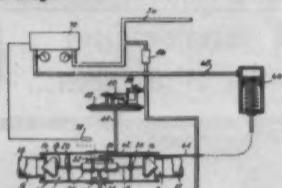
1. Apparatus for circulating air around stacked articles in a cold storage space comprising: an elongated air duct closed at one end and provided at its other end with a fan for forcing air into said duct, means for supporting said duct horizontal and spaced above the floor of said space to permit stacking such articles on said floor in vertically extending stacks to form an upwardly opening horizontally elongated pocket with the vertical sidewalls of said pocket defined by such articles, a plurality of nozzles along the underside of said duct for directly the air in jets from said duct vertically downwardly into said pocket through the upper open end of the latter....

2,821,070. ICE MAKING MACHINE AND STORING APPARATUS. John R. Watt and Raymond H. Stewart, Austin, Tex., said Stewart assignor to said Watt.



1. A liquid freezing machine which comprises, in combination, a freezing tube, means for refrigerating said tube to freeze a liquid therein into a frozen core, and means for supplying liquid to be frozen to said tube and for discharging said core from said tube including a connection to the tube for supplying liquid to be frozen under pressure to move the core along and out of said tube and at the same time to substantially fill said tube....

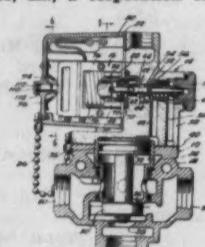
2,821,343. TEMPERATURE AND PRESSURE CONTROL FOR DUAL DUCT AIR CONDITIONERS. Nelson M. Payne, Farmington, Conn., assignor, by means assignments, to Allied Thermal Corp.



1. Temperature and pressure control apparatus comprising a chamber hav-

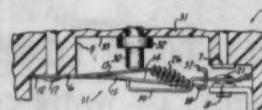
ing a pair of inlets for receiving gases at differential temperatures and varying pressures, support means mounted for movement relative to said inlets, a valve for each inlet mounted on said support means, pressure and temperature responsive means for automatically moving the valves simultaneously in a closing direction or simultaneously in an opening direction to vary the pressure in the chamber and automatically and simultaneously moving one of the valves in a closing direction and the other valve in an opening direction to vary the temperature in the chamber including means to move said support means.

2,821,355. SOLENOID VALVES. Frederick W. Hicks, Jr., Skokie, Ill., assignor to Mannifin Corp., Des Plaines, Ill., a corporation of Illinois.



3. In a valve for controlling fluid flow, the combination comprising a valve body having a plurality of ports therein, a valve member movable in said body for selectively controlling communication through said ports, a biasing spring in said valve body biasing said member in one direction to a home position, a power-actuated device having a movable actuating element engageable with said member for moving said member in the opposite direction away from said home position, guide means supporting said power-actuated device for movement toward and away from said body and in the direction of movement of said member....

2,821,568. SNAP ACTING ELECTRIC SWITCH. Hardin Y. Fisher, Hillside, Ill., assignor, by means assignments, to Controls Co. of America, Schiller Park, Ill.

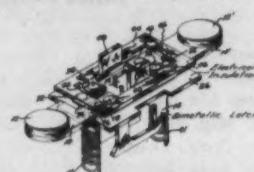


1. In an electric switch of the type wherein an overcenter spring effects snap actuation of a contact member in one direction from one position to another as a consequence of movement of an actuating member in the opposite direction to shift the spring to and slightly beyond a critical position of maximum stress; characterized by the provision of a third switch member having a portion movable back and forth in the same directions as said actuating and contact members; and further characterized by the fact that said spring is operatively connected in overcenter relation between said actuating member and the third switch member to snap the latter from one position to another during operation of the switch....

2,821,661. ELECTRIC OVERLOAD CIRCUIT BREAKER WITH BI-METALLIC LATCH OPERABLE ON LOW AMPEREAGE. Richard G. Ingwersen, Jackson, Mich., assignor to Mechanical Products, Inc., Jackson, Mich.

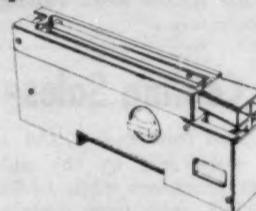
1. In an electric circuit breaker having overload protection, a combined bi-metallic and movable contact assembly comprising a laterally

spaced separate pair of U-shape bimetallic parts each having inturned flanges at the end of the legs thereof and a contact carrying arm con-



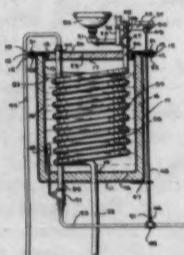
nected to one said flange of each U-shape part, a common conductor frame connected with the other flange of each U-shape part so that current flow takes place serially through said parts, said conductor frame connecting the diagonally opposite flanges of said U-shape bimetallic parts, an insulator frame, and link means connecting said other flanges with said insulator part to afford lateral stability to said other flanges.

DESIGNS
181,958. PORTABLE MOTOR-ASPIRATED PSYCHROMETER. Butger E. Colt and Alexander Uchnick, Baltimore, Md., assignors to Bendix Aviation Corp.



Week of Feb. 4

2,821,944. COOLING DEVICE FOR DRINKING FOUNTAIN. Andrew R. Olson, Madison, N. J., assignor to Suburban Propane Gas Corp., Whipppany, N. J.



1. Drinking fountain cooler means for connection to a water main comprising, water supply conduit means having an end operably affixed thereto and supporting the same, a spring closed stop valve in said conduit means and an operating member attached thereto, said member comprising a handle, convolutions in said conduit means comprising a helical water cooling coil, a chamber completely surrounding said water cooling coil and having all of its walls hollow....

2,821,945. EVAPORATOR STRUCTURE FOR REFRIGERATORS. Jesse B. Thomas, Louisville, Ky., assignor to Reynolds Metals Co., Louisville, Ky.



1. In an evaporator: an evaporator wall providing an evaporator chamber therein having an evaporator outlet passageway within the confines of said wall, through which passageway flows effluent fluid from the evaporator; a portion of said outlet passageway forming a sheathing conduit within the confines of said wall; a socket portion connecting the inlet end of said evaporator chamber with said sheathing conduit; a capillary tube extending through said sheathing conduit and having its interior end connected in said socket in sealing relation to said outlet passageway....

2,821,956. AIR FLOW DEVICES. Jack W. Rice, John M. Redmond, Jr., and Charles D. Mattingly, Wichita, Kan., assignors to The Coleman Co., Inc., Wichita, Kan.



1. An air mixer casing adapted for installation within the hollow stud space of a room wall, comprising an elongated and generally rectangular casing providing an air mixer chamber therein, the walls of said casing being glass fibers and being resin impregnated....

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D.C.

less than .025 of an inch thick covering said outlet and having closely spaced perforations therethrough distributed over substantially the full area of the outlet and having a combined free area between 35 and 55 per cent of the total area of the outlet....

2,821,899. AIR DIRECTING LOUVER DEVICES. Adam D. Goettl, Phoenix, Ariz.

1. In an air flow louver, a first plurality of spaced slats, each of said slats having a plurality of spaced substantially V shaped notches, each notch terminating in a closed apex and ex-

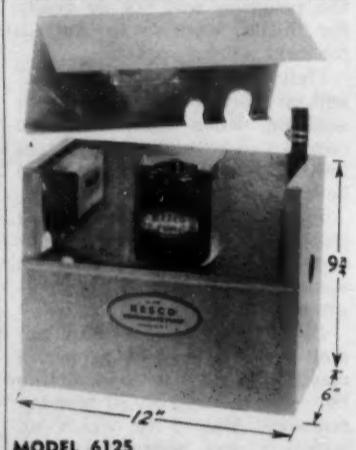
(Continued on next page)

SAVE TIME BUY AT YOUR WHOLESALER

KESCO
EST. 1944

CONDENSATE PUMP

1/30 H.P. to 1/3 H.P. 10 ft. to 50 ft. Head



MODEL 6125
EXCLUSIVE
REMOVABLE COVER SPEEDS
INSTALLATION AND SERVICE

WHOLESAVERS WRITE FOR SAMPLE
KESCO PRODUCTS CORP.
Jamaica 13, N.Y.

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications \$10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

TWELVE YEARS' experience with manufacturers of residential, commercial air conditioning and heating equipment as district manager and sales manager for factory branch. Sales application, advertising and promotional training all of broad and valuable experience with adaptability, flexibility and loyalty as additional assets. Willing to relocate to become associated with progressive manufacturer or distributor. Age 32, presently employed BOX A6009, Air Conditioning & Refrigeration News.

OVERSEAS EMPLOYMENT wanted—Broad experience in sales, engineering, management, and construction, on all sizes installations. Training in business administration and engineering. Military experience as Air Force construction engineer and purchasing officer. 5 years' overseas experience. No children. Age 38. BOX A6011, Air Conditioning & Refrigeration News.

EXECUTIVE ENGINEER—20 years of diversified experience in financial, sales, engineering, and production in the metal and plastics industries. Domestic and commercial refrigeration. BOX A6012, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

SALES ENGINEER wanted at home office for air conditioning and refrigeration application engineering, principally in O.E.M. field. Graduate engineer with previous experience preferred. Send resume and salary requirements to BOHN ALUMINUM & BRASS CORPORATION, Bettis Division, 1625 East Voorhees Street, Danville, Illinois, Attention: sales manager. Replies will be held in confidence.

TEST ENGINEER—Leading air conditioning manufacturer has opening for man with experience in air condi-

tioning laboratory testing. Design knowledge helpful but not required. Good salary, paid group insurance and other benefits. All replies confidential. Send resume to Mr. Williams, PEERLESS CORPORATION, 1853 Ludlow Ave., Indianapolis 7, Indiana.

AIR CONDITIONING installation superintendent — Southern California corporation in Riverside-San Bernardino Metropolitan area has excellent opportunity and permanent position for proven experienced shop and field supervisor in all phases of sheet metal installation, preferably in refrigeration cycle as well, encompassing residential and commercial jobs up to 100 tons. Knowledge of industrial applications helpful. Send abstract including previous salaries. All replies will be held strictly confidential. BOX A6013, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

LATEST STYLE 57 production 1 h.p. 230 V. single phase 50/60 cy. Freon-12 hermetic compressors Model AS1T16 air conditioning HBP. Complete with Klixon overload, relay, starting and running capacitor, \$59.00 ea. Send for free circulars and bulletins on air conditioning and refrigeration values. WALTER W. STARR, 2888 Lincoln Ave., Chicago 13, Illinois.

THERMORANK COMBINATION—One #2, 2 TV, 520 Kramer-Trenton unit, in original crate. Big discount—You can save on this unit. FRED C. KRAMER CO., 128 S. Paulina St., Chicago 12, Ill. Phone: TAYlor 9-2662.

BUSINESS OPPORTUNITIES

FOR SALE: Established air conditioning and heating contracting business—only Carrier full line dealership in central Florida—profitable all year business. Owner wishes to retire. Complete shop, power and electric tools for sheet metal, installation and service. Six pick-up trucks. Office, engineering and sales equipment and desks. Inventory low. Trained sheet metal, installation and service mechanics—qualified office, sales and engineering personnel. Will sell or lease building. Must have cash for facilities. About fifty thousand required. Write BOX A6014, Air Conditioning & Refrigeration News.

Want complete details
on a complete line of
quality, air-cooled air
conditioners for all
residential and com-
mercial installations

Get your free copy
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wholesaler or drop
us a line.
Do it today.



ARMSTRONG
FURNACE COMPANY
851 W. 3rd Ave., Columbus 8, Ohio
Division of NATIONAL UNION
ELECTRIC CORPORATION

Sees 5% of All Cars Conditioned In '58

Chrysler Convinced Car Conditioning Becoming Major Factor In Dealerships

DETROIT—Predicting that by the end of this year 5% of all new cars will be equipped with air conditioning, Clare E. Briggs, vice president of Chrysler Div., Chrysler Corp., disclosed that his division's air conditioning installations in 1957 nearly doubled those of the preceding model year.

See 15% of Auto's Cooled by 1960

Briggs thinks 15% of all cars coming off the lines will be air conditioned by 1960.

Chrysler has set up the first integrated assembly-line air conditioning system, Briggs claims, and is stepping up training of personnel to cope with growing demand.

Now offering three different types of auto air conditioners, Chrysler installations include one in trunk only, one front-end type only, and a new combined unit which has evaporators both front and rear.

Need Trained Men

"We are convinced that air conditioning is becoming a major factor in successful dealer operation," Briggs said. "Dealers must have the trained

In Dodge Cars

March Cooling Demand Tripled over '57 Month

DETROIT—Lee F. Desmond, Dodge vice president-sales, announced that the demand for air conditioning during the month of March has tripled over the corresponding period last year.

"From the fall introduction date through March of 1957, air conditioning accounted for only 2.1% of production," the announcement said. "The comparable figures for the 1958 model show that the demand for air conditioning has more than doubled—4.4%."

"In March, 1957, the air conditioning installations accounted for 3.2% of production, while the figure for March, 1958, is 9.6%."

Contractors--

(Concluded from Page 1, Col. 3) the contractor member, and to suspend and/or terminate his membership; and

"That when the architect sets forth design conditions in the specifications, and the contractor submits his own design and equipment scheduled, to meet the specifications, the contractor member will guarantee the installations to meet the design conditions for a period of 12 months, and if during said 12-month-period the installation and/or the equipment does not meet the design specifications, and the contractor, after written notice from the architect, refuses to correct the installation, the association will, upon written notice from the architect of such facts, immediately institute the proceeding to suspend and/or terminate said contractor's membership in the association."

Climate Control

Forms Firm To Specialize In Cooling Foreign Autos

HOUSTON, Texas—Climate Control of Houston, a new company which will specialize in air conditioning foreign cars, has been formed here, the company announced.

Headed by G. R. Dunham, president, and R. M. Leslie, the firm has offices at 405 N. Adams.

Distributorship rights for Artic-Kar auto air conditioners have been obtained.

Also, the firm will handle dealerships in Oklahoma, New Mexico, and Colorado, it was added.

Artic-Kar air conditioner is available for Jaguar, MG, Rolls Royce, Volkswagen, Mercedes-Benz, Volvo, Morris, and other foreign cars, the company declared.

Air Conditioning Control Problems To Highlight May ASHAE Conference

NEW YORK CITY—An All-Industry Conference on Control arranged by the American Society of Heating & Air-Conditioning Engineers will take place May 14 at the ASHAE Research Laboratory, Cleveland, it is announced by E. F. Snyder, Jr., Minneapolis, chairman of the ASHAE Committee on Research.

Purpose of the meeting, according to H. W. Alyea, Milwaukee, chairman of the Coordinating Committee for the conference, is to consider problems of control as applied to the air conditioning industry in the broad sense of controllability, particularly as related to system controllability characteristics and responses.

The morning session of the

all-day conference, after a keynote address, will be carried forward by a panel of six outstanding engineers. Each of these will present the position of his segment of the industry, and his presentation will be followed by open discussion from the full panel.

The afternoon session will continue with panel discussions, and comments from those in attendance will also be invited.

Panel speakers will consider group viewpoints such as those of the heat-exchanger manufacturer, the distribution-system supplier, the control manufacturer, the design-engineer or consultant, the contractor and user, and finally the position of the ASHAE as a coordinating agency for unbiased research.

Choose BOHN Refrigeration Units

Precision-designed and performance-proven to solve your refrigerating problems...efficiently...economically

LOW TEMPERATURE UNITS

All feature Bohn's unique, hermetically-sealed automatic defrost system... eliminates extra wiring, extra piping, costly control valves. All with grained aluminum cabinets, rust-proof fittings, life-lubricated motors.



MODEL LC Unit Cooler
For large walk-ins. 6000 to 24,000 BTU/hr. cap. at 10° T.D.



MODEL LM Mullion Le-Temp
For upright freezers. 1400 and 1900 BTU/hr. cap. at 10° T.D.



MODEL LR Unit Cooler
For reach-ins and small walk-ins. 1000 to 1900 BTU/hr. cap. at 10° T.D.

STANDARD COOLER UNITS

Compact units, all with practical built-in Bohn features, rust-proof fittings and life-lubricated motors, housed in long-life, grained aluminum cabinets. Simple to install, fully tested and warranted.



MODEL HR Half Round
For walk-in coolers. 2600 to 10,800 BTU/hr. capacity at 10° T.D.



MODEL C
For reach-ins. 1000 to 3000 BTU/hr. capacity at 10° T.D.



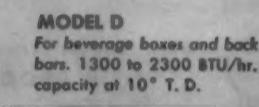
MODEL U
For small applications. 850 to 1500 BTU/hr. capacity at 10° T.D.



MODEL UM Mullion Unit
For reach-ins and dough retarders. 1300 to 2300 BTU/hr. capacity at 10° T.D.



MODEL UC Unit Cooler
For walk-in coolers. 2600 to 20,000 BTU/hr. capacity at 10° T.D.



MODEL D
For beverage boxes and back bars. 1300 to 2300 BTU/hr. capacity at 10° T.D.



Buy the known line...the BOHN line



Refrigeration and Air Conditioning Products • Special Heat Transfer Surfaces

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